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THE HISTORY OF—By DR. G. W. MILTENBERGER.

LAPAROTOMY FOR—with Report of a

Successful Case, By DR. T. A. ASHBY.

REVIEW AND DISCUSSION—By DR. H. A. KELLY.

GENERAL DISCUSSION.

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OF BALTIMORE CITY.

January 14th and February 11th, 1890.

PUBLISHED BY ORDER OF THE SOCIETY.

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ECTOPIC GESTATION,

BY G. W. MILTENBERGER, M. D.

Professor of Obstetrics, University of Maryland.

I have thought that it might be of some interest to the Society, to bring before it a crude history, somewhat hastily sketched, of *Ectopic or Extra Uterine Pregnancy*, and thus open for discussion, a subject replete with interest, not only to the professed obstetrlist, but to every general practitioner.

There are two striking abnormities of pregnancy ;—abnormity of numbers, constituting multiple or compound pregnancy ; abnormity or aberration of the site, at which the fecundated ovule becomes attached, and is, to greater or less degree developed, at a point entirely distinct and more or less distant from the uterine cavity.

With the interests necessarily involved and its great practical importance, with the amount of study and research expended upon it, with the simplification of its history which has necessarily followed, and the improvement and greater certainty of its treatment, there is scarcely a subject, whose evolution and development, have been more sharply and clearly defined.

With my duties as a teacher, I have been forcibly impressed, in connection with it, for the last ten or fifteen years, with the absolutely necessitated advance in instruction from year to year, and to note the almost prophetic foresight of the leaders of thought and action, and their more or less prompt fulfillment.

Although our accurate knowledge with regard to it is of but comparatively recent date, it has been sufficiently studied to enable us to gain a pretty distinct acquaintance with its natural history, its general etiology and mode of production, its progress and termination, its diagnosis and prognosis, and with the advance of abdominal surgery in the past few years to approach, at all events, very closely and upon well established grounds, its treatment at different periods and under different circumstances.

The very first question which meets us at the outset, is as to its site of arrest and attachment, in different cases ; and this point of its

natural history, has been of late years, much simplified. While necessarily from the normal course of the ovule from the ovary to the uterine cavity, the tubal variety is by far the most frequent, while for practical purposes it is only requisite to recognize the tubal, with its varieties, the tubo abdominal and the interstitial or tubo-uterine, the secondary abdominal and the sub-peritoneo-pelvic forms, we cannot with Mr. Tait, deny positively the occasional occurrence of ovarian and primary abdominal gestation. The researches of Spiegelberg and others, who have described cases in which they have found a gestation cyst in the situation of the ovary, connected with the uterus by the ovarian ligament, with the presence of ovarian stroma in the wall of the cyst, and the fallopian tube intact and without any evidence of previous rupture, forbid our denying the existence of the ovarian form, although others insist the examinations have not been made with sufficient care and discrimination.

As to the primary abdominal variety, while this has equally positively been denied, while it has been and is asserted, that if the ovum unfecundated or when first fecundated falls into the peritoneal cavity it cannot there attach itself and will certainly be absorbed, as were the early embryos of the rabbit, introduced into that sac in other animals by Leopold; we have as positive proof of its presence the two remarkable cases of Lecluyse and Kœberle. In the former, that of Lecluyse, the woman had previously been the subject of Cæsarean section. The wound had not perfectly closed, the fecundated ovule escaped through this opening into the peritoneum, had there attached itself and developed. In the latter, (Kœberle's,) a laparotomy had been performed, a portion of the cervix had been left, and the ovaries had not been disturbed. Abdominal pregnancy here followed and a fistulous communication was found through the cervix into the peritoneum. Here the ovum must have fallen into the serous sac, and the *Spermatozoa* have passed through the fistula, a necessarily *primary* abdominal pregnancy being thus produced. For practical purposes though, it is only requisite to recognize the tubal, tubo-abdominal and tubo-uterine as primary, and the abdominal and sub-peritoneo-pelvic as secondary, and as these last only follow an original tubal pregnancy, whose cyst has ruptured, and permitted the escape of the ovum, it is only the tubal variety, in one or other of the phases of its history that we need recognize, for surgical purposes. Unquestionably the simplest scheme ever proposed for these cases, and with some exceptions, the most truthful, and undeniably for practical purposes the best, is what has been called Mr. Tait's "genealogical table" of ectopic gestation, as follows:

I.—Ovarian, possible but not yet proved.

II.—Tubal, in free part of tube, is [*a*] contained in tube up to fourteenth week, at or before which time *primary* rupture occurs, and then the progress of gestation is directed into

[<i>b</i>] Abdominal or intra-peritoneal gestation uniformly fatal [unless removed by abdominal section], primarily by hemorrhage, secondarily by suppuration of the sac and peritonitis.	[<i>c</i>] Broad ligament or extra-peritoneal gestation;
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[<i>d</i>] may develop in broad ligament to full term and be removed at viable period as living child:	[<i>e</i>] may die and be absorbed as extra-peritoneal hematocoele;	[<i>f</i>] may die and the suppurating ovum may be discharged at or near umbilicus or through bladder, vagina, or intestinal tract;	[<i>g</i>] may remain quiescent as lithopedion	[<i>h</i>] may become abdominal or intra-peritoneal gestation by secondary rupture.
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III.—Tubo-uterine or interstitial is contained in part of tube embraced by uterine tissue, and, so far as is known, is uniformly fatal by primary intra-peritoneal rupture [as *b*] before fifth month.

Mr. Tait regards all cases as primarily tubal, while acknowledging the possibility of the ovarian form.

His view is that "It takes two directions (*a*) into the peritoneum, which is the fatal form; and (*b*) into the cavity of the broad ligament, a form which yields the variety of ectopic gestation, which I propose to call the extra-peritoneal, which was called the sous-peritoneo-pelvine variety by Dezeimeris, and which alone yields all the cases which go on to the period of viability, all the lithopedia, all the suppurating cysts discharging into bladder, rectum, etc., and also the cases which by *secondary rupture of the ovum cyst* get called abdominal pregnancy."

As to its frequency, it is very difficult to determine. According to Bandl, in 60,000 women, in seven years, in the three clinics of accouchement and gynæcology in Vienna, there were but five cases, one in 12,000. But when we reflect that many women may present this condition, and by the early death of the ovum be relieved without suspicion of its occurrence, and that many others may die from sudden rupture without a diagnosis of its cause, and when we recognize the great number which have been of late years published, we are forced to believe it of more frequent occurrence.

Cause.—The cause may in many individual cases be obscure, but in general terms, we can say, that it may be produced by any condition, which prevents or renders difficult the passage of the ovule to the uterus, while it does not prevent the access of the spermatozooids to

the ovule, or even where this obstacle is greater, there may be a passage of the sperm through the opposite tube (open) transmigration of the spermatozoa across the peritoneum, and the ovary of the opposite side thus be reached. The tube may be twisted or bent, its calibre be lessened by thickening of its walls, by polypi or other growth within it, or by pressure from without, the result of tumors or of previous peritonitis. Just here in connection with this part of its natural history, its cause, the new pathology has still further simplified it. We know that the interstitial form is very rare; in all his cases, Mr. Tait up to date, November, 1889, had seen but a single case, and the tubo-abdominal is also rare. Now this leaves in the vast majority the tubal only, in the free part of the tube as the primary seat. In almost all these women there has been a history of sterility either persistent or lasting for some time after previous pregnancies, showing that the generative organs were not in working order. We have learned of late years, and chiefly from the advance of abdominal surgery, the frequency of salpyngitis and that desquamative. The cilia are thus lost, whose action is towards the uterus, and their motive power over the ovum, must therefore cease, while as another result, the peristaltic action of the muscular tissue of the tube is also arrested or diminished. Therefore the ovule is arrested at some point of its course and is there attached. Now this fact remains, even if we cannot agree with some most distinguished observers, that the action of the cilia in health is to absolutely prevent the transit from without inward of the spermatozooids along the tube, and that it is only when thus diseased, that they can reach the ovum thus arrested in it. The ovarian cases positively disprove this last assertion, which is so strongly insisted upon by Mr. Tait and others.

Speaking with all due respect, and from one so humble as myself, with almost bated breath, of one to whom the profession owes so much, and whose whole heart and soul, with his brilliant intellect, his most wondrous tactile skill, and almost marvelous dexterity, have been devoted to the advance of science and of art, we are compelled to insist that these cases of ovarian pregnancy positively disprove Mr. Tait's assertion, that conception normally takes place only in utero, and that the spermatozooids can never traverse the tube in its normal condition, on account of the cilia working in the opposite direction. He further states as a matter of logical sequence, that it is only after desquamative salpyngitis that the spermatozoa can reach the ovule in the tube, and therefore this is the cause of tubal pregnancy.

Now it is positively known and has been for years (Bischoff and others,) that the spermatozoa pass out through the tube upon the ovaries, and into the abdominal cavity in the lower animal. Mr. Tait asserts that in the lower animals the tubes differ from those in the human being, and have no cilia, while we know perfectly well they

have. He further states that the destruction of the cilia by "desquamative salpyngitis would at once put the tube in a condition exactly similar to that of the uterus." This is physiologically impossible. Anatomy, histology, pathology, all fully disprove it. The spermatozooids can and do move by their own inherent force, at a rate variously estimated by Henle at one inch in seven and a-half minutes, by Sims to move their own length in one second, and Robin and others have seen them exerting sufficient power to push out of their way cells or crystals ten times their size. We recognize this inherent power, in those cases, which I have myself seen, where women have become pregnant, with an almost imperforate hymen, or with atresia vaginæ so close as to leave only a very small fistulous tract leading to the uterus. One tube may be entirely closed and the ovum be impregnated by spermatazoa from the other tube. "Leopold tied the right fallopian tube in rabbits in two places and exsected a portion of the tube between the ligatures; the left ovary was carefully removed and the abdominal wound was closed. After recovery the rabbits were put to the male. In two such cases pregnancy followed." Again the mass of authorities agree absolutely that the ovum, if unfecundated is short-lived, that the human ovum does not reach the uterus before the eighth to the tenth day after it has left the ovisac, in the bitch in eight or nine, in the guinea-pig in three or four, and if not impregnated loses its vitality before reaching the uterine cavity. While then desquamative salpyngitis does act frequently as such cause of arrest, the ovum is fecundated at the usual point, and it is not, as Mr. Tait says, because the sperm cannot otherwise reach the tube.

Natural history.—In each and every case, whatever be its site, and whatever be the history and character of the changes, anatomical or physiological of the tissue or organ to which it may become attached, the ovum itself, granting its vitality, its nutrition, its growth and development, must of necessity obey the same laws and develop in the same mode as in its normal situation, the uterine cavity. It grows and develops, it is nourished by its own vital powers. It must form the blastodermic membrane, it must have its amnion, and its allantois, it must produce its chorion with its villi and these villosities will at first cover the whole ovum, and later, will atrophy over the larger part of the chorion, will increase and hypertrophy on that part which is in contact with the nourishing tissue or organ, and form there and thus the fetal placenta. But, in regard to the structures to which it thus becomes attached, their natural history will vary according to their histology and their character. It is necessary for us only to consider these in the tubal form. And first as to the tubal form, under which we have but three varieties: tubal, tubo-interstitial, and tubo-abdominal. In the first it is arrested at some point in the free portion of the tube. There it is in contact with the mucous membrane of the oviduct.

This, from the irritation of the living body in contact with it, becomes more vascular, thickened, swollen and hypertrophied; differing, however, as it does, from the uterine structure, we have merely as it were, a quasi-decidua serotina, there is no decidua reflexa, the chorial villi press and extend into its substance, come into contact with its enlarged vessels; but we have no uterine sinuses, no such close relation between the blood of the child and that of the mother as we find in the true maternal placenta. The veins here have all their coats and the villi do not penetrate into their cavity. The tube may be closed to the one or the other side of the ovum, or it may remain open. Continuing to grow and increase in size, the chorial villi push through the mucous lining to the muscular coat, the latter expands as far as possible, its fibres are pushed apart and separated and finally, as a general rule, its resistance overcome, it ruptures with results more or less dangerous. Rupture in this tubal form generally occurs between the eighth and twelfth week, or before three months.

Again death of the ovum may occur at a much earlier period, either from deficient nutrition, or from slight hemorrhages, severing its connections, which are here fragile; or, on the other hand, the tube may yield without rupture and gradually expand until full term is reached.

With the increased vascularization of the mucous and muscular layers of the tube, the peritoneal covering sympathizes, the vessels at that point enlarge and hypertrophy, a very active circulation is established. Nor does the uterus remain quiescent, it is at first displaced most often laterally, and more or less elevated; later it is carried in front, if the foetal cyst descends into Douglas' Pouch. It preserves its form but increases in size, less however than in uterine gestation of like date, and the nearer the uterus the foetal cyst the greater its size, the more remote, the less at corresponding periods. Not only does it thus augment in bulk, but we have the change in the mucous lining which hypertrophies and the decidua is formed of the same structure as in normal gestation. This decidua becomes detached and is thrown off, either in mass or in portions, chiefly when the ovum dies or the tube ruptures, or even when neither occurs, but the gestation continues to full term.

In this history then we may observe in different cases:—the death of the foetus;—the rupture of the tube, or its development to term.

Death of foetus.—The foetus may succumb at any period, as before said. If it occurs at an early date, it may be entirely absorbed, as has been experimentally proved by Leopold, who placed in the peritoneum of an animal three young foetus of the rabbit. Their tissues were soon invaded by leucocytes and absorbed without leaving any trace. If death occur at a later period, the foetus may be encysted and different results follow in different cases.

Rupture usually occurring from the eighth to the twelfth week, may take place into the peritoneal cavity, or below, between the layers of the broad ligaments. If the former, the blood of course is effused into the peritoneal sac; it may be so profuse as to be promptly fatal to the mother, or life may be preserved for some days. Still further the hemorrhage *may not* be mortal, blood and fetus pass into the cavity, may give rise to serous irritation, and plastic exudation which will localize it, there is a hemocele. The fetus having died, absorption may take place and the mother recover.

Where it breaks into the sub-peritoneal pelvic cellular tissue, the blood may be absorbed and the woman recover, or it may become the seat of future trouble, or again go on to term.

In the interstitial variety, the connections of the ovum, are formed in the same way, the sac is formed of the musculature of the uterine wall, and it follows the same history. Rupture most frequently takes place before the end of the third month, but occasionally it persists to the fifth or sixth month, or even, though very rarely, to term.

In the tubo-abdominal variety, the cyst is formed on one side, by the fimbriated extremity of the tube, the other surface of the ovum protruding into the abdominal cavity. Serous irritation is excited by its presence, exudation of lymph follows, coats the free surface and thus encapsulates it. Layer after layer may thus form as it enlarges; until finally it may form connections with the most distant abdominal organs, kidney, spleen, liver, &c. We can easily understand how here and under these circumstances, though rupture may take place, it is far more likely than in the others to go to term.

Ovarian Gestation.—Here, as I have before said, this form has been denied over and over again, but its occurrence has been positively proved, and in both of its varieties, external and internal. Indeed we cannot refuse to recognize it, when the ovary as such cannot be found, but the foetal cyst is attached to the uterus by the ovarian ligament; when ovarian stroma is seen stretched over its surface, as in ovarian cystoma; when finally the tube evidently forms no part of it. Spiegelberg found only nine; his own making the tenth. In 1881, Kleinwächter stated that two had been found since, so that the entire number was then twelve. Leopold in 1882, reported a case, which according to him, was the fourteenth where the anatomo-pathologic proof of ovarian pregnancy was established. Another has been reported in 1885 by Samson, making the number fifteen; and to these may now be added, 1889, the case of Ashby, thoroughly examined and satisfactorily determined by so accurate, reliable and unimpeachable authority as Prof. Welsh of Johns Hopkins University.

Here again rupture may take place in the earlier months, but it may also go to term.

Abdominal Gestation.—With this, as I stated, we recognize two forms, primary and secondary ; the former of which is denied, but which I showed did at times exist. Here the fecundated ovule does not reach the tube, but falls into the cavity, to whose serous membrane it attaches itself, and goes on to grow and develop. In this case, the serous membrane may undergo no change, no pathological irritation is produced by the soft yielding little mass, but it acts as a physiological irritant, the subserous cellular tissue is hypertrophied and its vessels enlarged, as are those of sublying organs, and an excessively vascular area is thus produced, which acts the part of maternal placenta, and with which the chorial villi, the fetal placenta, come into contact. In some of these instances, in the absence of irritation, these do not become encysted, the ovum is perfectly free, except at the placental attachment, and we find only the amnion and chorion, without any other investment. Again serous irritation may be produced, there is effusion of lymph and an enveloping capsule is formed around it. Rupture may here occur, but, as you can easily see, it is more likely to go to term.

In tubal pregnancy when rupture occurs, it far more frequently does so through that part of the tube covered by peritoneum, the more so as this comprises by far the larger segment of its calibre, and the cyst or foetus, falls into the peritoneal cavity. But again, and this is one of its most interesting varieties, the tube may burst at that part uncovered by peritoneum, between the layers of the broad ligament, in contact with the sub-peritoneal pelvic cellular tissue, into which it escapes, and thus constitutes what has been usually termed sub-peritoneo-pelvic gestation, but by Mr. Tait most aptly named extra-peritoneal pregnancy.

This title is thoroughly appropriate, as not only does the escape thus take place, outside of the peritoneum, without entering the serous sac or involving its continuity, but whether its vitality is lost in its new position, and is followed by absorption, if at an early period, or if inflammation be lighted up with suppuration and its escape through one of the neighboring canals or organs, or through the abdominal walls, or it continues to live and to go on to develop, it may be for four or five months, it may be to term, it and its results remain extra-peritoneal, unless there be a secondary rupture of this new cyst, into the abdominal cavity. Where in these cases, suppuration follows, it may open into and through the bladder, the vagina or the rectum, the foetus coming away piece-meal, or the pus may burrow to the front of the abdomen, and there make its appearance externally, even as high as the umbilicus. And this is what you would naturally expect from your anatomical knowledge, that suppuration taking place between the folds of the broad ligament, would follow such route, and those cases, in which after four or five months the foetus dies and later the bones

make their escape through these passages, are generally, if not always, instances of this extra-peritoneal form. Even when it goes on to term, it remains extra-peritoneal, pushing the peritoneum before and above it, as it enlarges, as has been perfectly well shown post-mortem, Berry Hart's specimen proves it completely. And this is not only of exceeding interest, but is a most important practical point, as here when it goes on to term, or operative procedure is required before such time, the cyst and its contents are entirely outside the peritoneum, and that membrane need not be opened or wounded in extracting the foreign body.

Results :—As this whole process is abnormal, so do we find abnormal terminations, which however differ much in different cases. As we have already seen (illustrated experimentally by Leopold), if the death of the ovum occur at an early period, it may be entirely absorbed and disappear. Even when death occurs somewhat later, the liquor amnii is absorbed, the cyst collapses and applies itself to the foetus, and the contents may be converted into a fatty mass, adipocere. Again, the fluid contents are gradually absorbed, and there is nothing left but the foetus or even only its skeleton and lime salts. The sac becomes infiltrated and forms at last a calcareous shell and constitutes a lithopedion. More rarely we find such calcareous shell, containing within it a foetus which retains fully its normal aspect and in which by careful examination, we can trace the normal histology of all the organs.

A lithopedion, in the sense of a complete petrification, never exists. It appears in three forms :—1. The fluid is absorbed, the cyst calcifies and the foetus mummifies. 2. The sac calcifies, as does also the foetal surface, where it may be in contact with the sac. 3. Where the foetus has escaped into the abdominal cavity and the salts are deposited in the smegma and beneath it, the tissues within the chalky layers being mummified. In either of these cases or where the foetus has become converted into adipocere, it may be retained for many years, fifty or more, without further disturbance, but not usually, as accidents may arise at any time during its continuance. The cause of these accidents is, in general, putrefaction. When the child dies in utero, while the membranes are intact, this does not occur necessarily, but in these cysts it comes on, in a large proportion of cases, most likely from the proximity of the intestines, with the fermentative matter they contain and their bacteria. We may thus have peritonitis or septicæmia, either of which, or the two conjoined may prove fatal. Inflammation of the sac is often followed by ulceration, the contents making their way externally by various routes. It is but rarely that they open into the peritoneum. It may be through the abdominal walls, possibly at the umbilicus or at some other point in the linea

alba, or into one of the hollow viscera or canals, the vagina, the rectum, the bladder, the uterus, or even in one case by the stomach. If it be small, the whole may at once pass per rectum or vaginam, or piece by piece, occupying often a long time and then, if the woman does not sink with marasmus or exhaustion, recovery may ultimately ensue. I have already spoken of rupture and its results, sometimes, but rarely, as we have seen recovery ensuing, in the great majority death from shock, from hemorrhage, or from peritonitis.

When it goes on to term, we have false labor, the extrusion of the decidua, if it has not previously been thrown off, and the child dies during the expulsive efforts. In the majority of cases, suppurative inflammation then sooner or later is lighted up, and the woman dies from exhaustion, suppuration, peritonitis or septicæmia. Finally the dead fœtus may remain, be converted into adipocere or a lithopedion, but very rarely.

Symptoms and Diagnosis:—There is scarcely a single point in this whole history, which has given rise to more acrid discussion, than this question of diagnosis. While all acknowledge its difficulties and uncertainties, while errors, and of most serious character have occurred in the hands of the astute and skillful, the great majority of reliable observers agree, that in a large proportion of cases, a diagnosis is possible. Others and those chiefly of the modern school insist, that such diagnosis cannot positively be made, and unjustly attempt to support their view, by claiming that Mr. Tait says that he *cannot make it*. This Mr. Tait does not say; he only states, that he cannot speak definitely upon this point, inasmuch as, as a surgeon, he only sees these cases after rupture, and he has only seen one previous to rupture.

The earlier symptoms are those of normal pregnancy, and indeed in some instances we may have no pathological symptoms until the gestation is somewhat advanced, or until rupture occurs. At first we have suppression of the menses, uterine enlargement, the changes in the mammæ, the sympathetic disturbances of the stomach and intestines and of the nervous system. Even with multiparæ they may recognize their pregnancy, but feel nothing which would cause them to look for anything abnormal. But this is not always so. The recurrence of the monthly flow for one or two periods is not uncommon, or they reappear irregularly after their suppression; the flow may then be moderate, there may be a constant sero-sanguineous discharge, and finally, though but rarely a true hemorrhage. The uterus enlarges, the increase in size being not in proportion however to the date of pregnancy, and the organ being flattened and not rounded, differing in the different varieties, being largest in interstitial pregnancy, at times from four to seven inches, less in tubal, and still less in ovarian or abdominal. The neck also is somewhat softened, but not in proportion to the period in the given case. The decidua may be cast off,

partially or entirely with the discharge, particularly at time of rupture, or it may remain *in utero* until term. The position of the organ is changed, pushed upwards or downwards, to one or other side, according to the seat of the sac, most frequently, forwards and upwards, behind and above the symphysis. With this, not often in the first month, but from the second month on, pains supervene, at times moderate, but often so acute and sharp, in some cases like colic, a sickening pelvic pain, that the woman cannot walk or stand; again so violent, that the surface becomes cold and pale, bedewed with sweat, the pulse is small and thread-like, and syncope may supervene.

We have thus far then the ordinary rational signs of pregnancy in the early months; pain more or less severe, due probably to distension of the tube, apt to subside for a time only to recur; and uterine hemorrhage, irregular as to time and quantity, and containing shreds of membrane, portions of the decidua vera.

With these signs, and the rather if we detect portions of decidua, there are strong grounds for suspicion which may be confirmed by bimanual examination, under anæsthesia, if necessary. We can then trace the volume, the form, the situation of the uterus and the tumor, and the relations between them and the neighboring organs. We detect the uterus pushed to one or other side, or thrust forward, and the tumor on its side or behind it, more or less regularly oval, more tender on pressure and softer than the uterus, often with a sulcus between the two, which can be detected by the finger, and at times somewhat mobile, so that we may be enabled to ballot the whole *en masse*. If we can examine it from week to week, we find that it increases rapidly in size, much faster than the pregnant uterus.

Thomas says: "The physical signs, which have sustained the validity of the symptoms, are—1. Increased size of the uterus, and displacement of it upwards, forwards or laterally. 2. Evidence of vacuity in it, yielded by the sound or tent. 3. The presence either to one side of the uterus or behind it, of a cystic tumor, somewhat painful to the touch, rather immovable, giving to palpation the sense of obscure fluctuation, and in some cases, yielding the sign of ballottement. In a few of my cases this sign has been plainly distinguishable, but this has been an exception to the rule, and the absence of it should never be relied on, as evidence against the existence of the condition." The vacuity of the uterus can be positively proved, by the use of the sound, or by dilatation of the os, and the introduction of the finger. Now while we avoid this, if possible, for fear of inducing abortion, if uterine pregnancy should exist, in addition to which in the most careful hands, the uterine walls thus softened, have been punctured, yet if symptoms are urgent, and interference really needed, we are then justified in resorting to this *experimentum crucis*. By two months or in the third, the tumor may be seen or felt above one or other groin.

With these evidences we might *a priori* conclude that the diagnosis in the early months could be generally positively established, and undoubtedly such diagnosis has in many cases been confirmed by the results, but in a large proportion it is not by any means certain. A retro-flexed gravid uterus, a uterine fibroid, an ovarian cyst, a hematosalpinx, have all been mistaken for tubal pregnancy. And again we do not often see such cases until rupture has taken place. While then as I have said, Mr. Tait is sceptical upon this point, and states he has not had sufficient experience in these cases before rupture, to speak ex-cathedra, while a large proportion of his followers deny that a positive diagnosis can then be made; even Dr. Thomas, who has had so much success in their electrical treatment, although it is true many have insisted that in these instances he was more than once mistaken in their character, writes: "After all that has been said with regard to the diagnosis of ectopic gestation, it must be added that a positive conclusion is very generally difficult and often impossible."

In a discussion in 1886 of a well known case successfully operated upon by Dr. Howard A. Kelly, then of Philadelphia, now of Johns Hopkins Hospital, Dr. R. P. Harris said: "The case reported by Dr. Kelly had as clear a history as we ever find in the very early history of ectopic gestation, when it cannot be claimed that a positive diagnosis can be made." After the fourth month, it is about the size of the two fists, and now and after, instead of the regular enlargement of the pregnant uterus, on or near the median line, it is more irregular and to one or other side. We now by palpation detect fluctuation or semi-fluctuation in it, with dullness over it upon percussion, and with care may be enabled to map out the fœtus; this latter at times, but not by any means always, appearing to be directly under the examining hand. After this time, the fourth month, we may ballot the fœtus in its sac, and by auscultation, we hear the *bruit de souffle*, and the sounds of the fœtal heart, usually intensified. The fundus uteri can frequently be felt as a distinct mass on the fœtal tumor. The enlargement of the uterus and the softening of the neck are not in proportion to the duration of pregnancy and body and neck of uterus are of course more or less displaced. By some it is claimed that here we have one positive sign. We know the value of Braxton Hick's sign, the rhythmic contraction of the pregnant uterus, and that by friction we can elicit it. In the extra-uterine-cyst, it is said, no such contraction is induced by friction. But in tubal pregnancy somewhat advanced this sign may be elicited; and hence with our knowledge of its natural history; and the comparative infrequency of other forms; we see how little we can depend upon this for a positive conclusion.

Rupture; Symptoms, &c.—Rupture of the gestation cyst can scarcely be mistaken or unappreciated. Given a woman with, it may

be, a history of previous sterility, who has had menstruation suppressed for a month or two, or more or less irregular; who suffers an attack of severe intense abdominal pain; at times saying that she has felt something torn within her, with prompt and severe collapse, cold, palid surface, bedewed with cold sweat, quick and feeble pulse becoming rapidly or gradually imperceptible, vomiting even in the recumbent posture, it may be with delirium or convulsions, we have every evidence of severe internal hemorrhage, and apart from traumatism or imperfectly checked bleeding after operation, we know there is scarcely another cause for such loss. The frequency of its occurrence is well shown by a statement made by so able a Pathologist, as Dr. Formad, Coroner's Physician of Philadelphia, that in his post mortem work within a very short period he had found eighteen deaths due to ruptured tubal pregnancy, in all of which, in consonance with the uniform experience of Mr. Tait, it had occurred before the twelfth week.

Now, as I before remarked, this rupture may take place in that part of the tube covered by peritoneum, or that part not covered by peritoneum, but between the folds of the broad ligament. I can best give its natural history in the words of Mr. Tait. "On the walls of the tube, becomes developed an organ which weakens them—the placenta. The formation of large venous sinuses on the site of the implanted placenta diminishes the ability of the tube to distend, and it tears. This coincides with the formation of the 'cake' of the placenta. Up to a certain point the placenta is diffused as a villous layer, but in about the eighth week it becomes restricted to one spot, when you get what is called the placental cake. I do not know that the development of this placental cake has an all-powerful influence in determining the rupture, but it certainly exercises some influence.

The rupture always takes place before the time of the limit of the formation of this placental cake, and the time of the rupture is, therefore, clearly limited to the twelfth week. I have never met with a specimen later than that. Now the rupture may take place in one of two directions. In one case the placental cake may have formed upon the site where the layers of peritoneum meet, or, on the other hand, it may form upon some part of the wall which is closely surrounded by peritoneum. In the first instance, the rupture takes place into the broad ligament; in the latter, into the peritoneal cavity. Although I have been preaching on this subject for twelve years, I have failed to get my professional brethren to see what an enormous difference this makes in the subsequent progress of the case. It means that if this hemorrhage takes place in the peritoneal cavity it is uncontrolled. If you put a bleeding surface under water, you remove one of nature's great hæmostatics, coagulation. If you have bleeding into a confined space which is capable only of limited extension, especially if that space be

filled by something that is capable of inducing coagulation, such as irregularly distributed muscular fibre, you have a strong means of arresting hemorrhage ; whereas, if the cavity be indefinite in its capacity there is a corresponding absence of the cause of coagulation. This is an explanation of the different endings of these cases. In rupture into the peritoneum the bleeding practically goes on unchecked. Every one knows that if a vessel has not been properly tied or if a ligature has slipped after ovariectomy, there are no means of checking the hemorrhage, because the blood does not properly coagulate, and a little vessel from an omental adhesion, which would not be of the slightest consequence in an amputation, would be sufficient to cause death after an ovariectomy. You have thus in the one case every possible condition favorable to the continuance of the hemorrhage, while when the rupture takes place into the cavity of the broad ligament, you have all the conditions favorable to the arrest of the hemorrhage. Hence, the latter is rarely fatal. Here, then, we have a great natural difference between these two varieties of tubal pregnancy. One has no natural tendencies toward cure, and the other has all. In the one case you have to do with a patient who will die inevitably unless you interfere. In the other you have a condition which you may safely leave alone. In the one case you have hemorrhage into the peritoneal cavity, and in the other you have it extra-peritoneal into the broad ligament, and I think I have made it clear that the prognostic importance of the two is as different as can well be."

You may ask if you can diagnose the one from the other? You can, as, Mr. Tait has well shown. With the general and local evidences of loss of blood, if intra-peritoneal, you have hardly any signs, you palpate gently, and you have obscure fluctuation very difficult to make out even when the amount of effused blood is large. Percussion gives nothing very remarkable, you get dullness here and resonance there, but nothing to indicate positively what is the precise condition. Vaginally you feel an indistinct boggy swelling in Douglas' Pouch, but there is nothing very clear about that either. The relations of Douglas' Pouch are practically unaltered.

In the extra-peritoneal variety, there may be, it is true, various causes, but in these cases of tubal pregnancy rupturing into the broad ligament, the signs are positive. You have a smooth, tense, rounded tumor in the pelvic region, sometimes reaching almost or quite up to the umbilicus. This is the broad ligament dissected upward and distended by the effused blood. There is distinct fluctuation. On vaginal examination of the pelvis you have a condition which is absolutely distinctive, viz: The whole of the roof of the pelvis is fixed and coming down from each side of the uterus, you have processes of induration extending. You have a more or less flat topped roof and pillars down each side which indicate the burrowing of the blood along the pelvic

fascia. Then there is another condition almost certain to occur if the case be a severe one, viz.: Stricture of the rectum. Remember that the broad ligament comes off from the uterus, and it gradually opens one fold on either side of the rectum, and if blood dissects it up, one of the roads will be to the front of the gut and around it, and you have annular stricture of the rectum, which will not disappear for many months. Now let us go back to the history. First the history of sterility, then the suspicion of pregnancy. The patient thinks she is pregnant. There may be irregular discharges, sometimes profuse menorrhagia, but not often a clear history suggesting pregnancy. But if you have the actual condition what you wish to determine is, is the blood in or out of the peritoneum? And this you can determine on the data which I have given you. If the symptoms are negative, then the hemorrhage is inside the peritoneum; if otherwise, then outside.

When the embryo has not died early, when rupture has not taken place, when the fœtus still preserves its vitality to full term, when of course we expect it to be ovarian or abdominal, or even at times before this period, at the seventh or eighth month, we have what is called "false labor," the symptoms and character exactly such as we see in veritable accouchement. The labor pains are of course the same as are produced by true uterine contractions, the os opens, there is more or less loss of blood, and if it have not been previously discharged, the decidua is now cast off and the fœtus dies. That the contractions are in the uterus is fully proved by our recognizing them, with the hand placed over it, and it has been seen contracting when laparotomy has been, at such time performed. After these have ceased and the fœtus dies, we may have the breasts swell as after normal labor, secretion of milk may come on and even a discharge simulating the lochia. Sometimes, though very rarely, the cyst ruptures during the false labor, but whether ruptured or not, the fœtus now dies.

Treatment.—As we have seen then, in every case of extra-uterine gestation, the prognosis is most grave, whatever may be the variety, and at all periods of its history, whether in the earlier months, or at a later period, when it approaches toward maturity, or after the death of the fœtus. When to this is added the fact, that in some women there may be nothing to attract attention until rupture of the cyst occurs, and in many cases the difficulty of positive diagnosis even when under observation, we perceive that this is one of the most trying cases, which can be presented to us. Until the last ten or fifteen years, there were no generally received and recognized positive rules for their treatment and even in our latest text books, even those published in the last five years, there is so conspicuous an absence of clearness, that the most diligent student is unable to formulate distinct and satisfactory views of its natural history or its treatment. Looking at its natural history we see at once, how insignificant a rôle must

be played by any palliative treatment, and that any remedial means which offer hopes for the mother must be distinctly, and if possible, positively curative.

Does nature here assist us in our determination, or point out to us in any way a curative intent? It is evident from what we have seen, that the most favorable result, in all these cases, is the death of the fœtus in the earlier months, and we thus have a positive indication from nature herself.

In the very outset we must divide them as to treatment, into three classes:

1. In the early months, say up to the fourth.
2. From this time up to full term.
3. After the death of the fœtus.

In the first period, up to the fourth month, the direct indication would be, and this has been borne out in practice, either to destroy the life of the fœtus, leaving it *in situ*, or to remove by the knife both fœtus and cyst. As to the use of medicines administered to the mother, as was at one time done, so utterly nugatory is it, that we need not waste time upon it. For this purpose, puncture of the cyst, injection into the sac of drugs toxic to the fœtus, and the faradic or galvanic current have been the chief fœticidal means used of late years.

Simple puncture of the cyst through the abdominal wall, through the vagina or the rectum, with the evacuation of the liquor amnii naturally presented itself, but in twelve cases collected by Maygrier, eight of the women succumbed to hemorrhage or peritonitis, while in one case (Fränkel) despite the puncture, the withdrawal of nearly half an ounce of liquor amnii, and a hemorrhage, the pregnancy went on to term. Of all reported thus treated, the mortality is 66 per cent.

More successful has been puncture with the injection of toxic drugs, atropia and morphia, chiefly the latter, but it has fallen into almost entire, if not absolute, disuse.

Later than these and more reliable is the employment of the faradic or galvanic current, preferably the former, which we may claim in its present and proper mode, as purely American. Allen, of Philadelphia, 1869 to 1871. Aveling claims the first successful case in England only as late as May, 1888. Before that period, 1870, electro-puncture had been resorted to, and of late Apostoli has recommended the use of galvano-puncture, without, however any personal experience with it. This however is fraught with danger, and I believe there is only one successful case on record. The sac now (Allen's method,) is not punctured, but one pole being brought into proximity with the sac, by the vagina or rectum, preferably the latter, the other pole is placed over

the top of the cyst above the groin. A daily séance of ten or fifteen minutes suffices, and so successful has it been and so thoroughly has it been brought to the notice of the profession in this country, chiefly by Dr. T. Gaillard Thomas, that up to the present time, it has been generally received and adopted with us, as the foeticide in these cases. It has not been accepted abroad, but in America, we have had reported some forty cases, with but one death and that from hemorrhage following an application. In the great majority of these cases, although it has been asserted that often the diagnosis was erroneous, the character of the reporters and the histories of the cases, prove, I think, its truth. One of the forty was reported by an honored member of this Society, Dr. H. P. C. Wilson. But here, you see, while it may kill the child, and thus arrest the growth of it and its cyst, yet while the absorption of both may take place, as after the natural death of the foetus, yet both are left for a time, and may undergo those changes which have been traced after its death, and be liable to such further changes and disturbances as may lead to the death or the persistent invalidism of the mother.

No woman is safe, as long as she bears within her, the result of an ectopic pregnancy. As yet then, or up to a very recent date, it has been here the most generally adopted plan, but in the past few years, the only positively and ultimately curative means, the entire removal of both cyst and foetus by laparotomy has been gradually growing into greater favor with the profession. This ought not to be more serious than the removal of the tubes and ovaries, and to the surgeon is surely the ideal method, leaving no foreign body to be disposed of and no serious after-effects to be feared. It is certainly taking a stronger hold upon the profession in this country and is the recognized procedure in Germany. Veit records seven successful cases and no failures. Dr. A. Martin says we have agreed to operate at once in our tubal cases, when diagnosed. Even in cases, where the symptoms and signs are not absolutely positive, but affording strong grounds for such diagnosis, as there is detected an abnormal tumor, an exploratory operation is here justifiable. When the sac is low down in the pelvis, when the foetus can be felt through it, particularly when the sac is thin, elyotomy, cutting through the vagina into the cyst, better with electro-cautery or Paquelin's cautery has been resorted to at times with success, but of late years has been almost entirely discarded. Mr. Tait insists upon the utter unjustifiableness of the vaginal section and uses this strong language: "I shall never, under any circumstances whatever, attack a sub-peritoneal pregnancy from the vagina."

Rupture of the cyst.—During this period of which we have been speaking, the first four months, as we have seen, we meet with the most serious and dangerous of its accidents or complications, rupture

of the cyst, hemorrhage, peritonitis, and septicæmia. We have traced its natural history, its symptoms and diagnosis, and have noted its most imminent peril.

What then shall we do?

We know that in the vast majority of these cases, if the hemorrhage be into the peritoneum, although in some rare instances the hemorrhage has ceased, and recovery from the immediate danger has ensued, we from bitter experience, have no right to expect it in the individual case. We equally well know that drugs of any kind or to any extent are utterly futile. We know that the conservatism or rather the expectancy of a previous day, the application of ice to the abdomen, the compression of the vessels indirectly by hand or compress, the administration of opium to relieve pain, of stimulants to rally and sustain the failing powers of life, are equally of no avail. Of five cases thus treated as reported by Dr. T. Gaillard Thomas, four died.

Are we to stand by with closed hands, passively watching the doomed and dying sufferer certainly lost? Mere common sense and the fixed surgical law to cut down upon and ligate a wounded vessel alike protest against it, and point at once and inevitably to the proper course to pursue. At once and under all circumstances, open the abdomen, ligate the broad ligament and the fallopian tube, make the peritoneal toilette, in a word, perform a laparotomy. And here when we have opened the abdomen, however great the amount of effused blood within it, do not wait to remove this, but at once pass the hand down to the fundus uteri, as a guide, trace to the one and the other side the fallopian tube, and finding the rent, ligate tube and ligament and only after remove the contents.

To the end of 1887, Mr. Lawson Tait, that inimitable surgeon, had thus treated twenty-one of these cases with twenty recoveries; by the end of 1888 his cases ran up to thirty-eight with thirty-four lives saved, and to November, 1889, he had operated upon forty-seven. This, as I have said, where the cyst has ruptured through the peritoneum and the hemorrhage is into the serous cavity.

But where the tube has ruptured at the part uncovered by peritoneum, between the layers of the broad ligament, and the blood has poured into the sub-peritoneal pelvic fibro-cellular tissue, constituting a true pelvic hematocele, our course should differ. When it is in the peritoneum, as we have said, there is no natural means for its arrest, or to promote coagulation; here, on the contrary, it is confined, it infiltrates the cellular tissue, coagulation is favored and a clot is formed. The knife should be confined to intra-peritoneal hemorrhage. If the loss be extra-peritoneal, into the pelvis, if we open through the vagina, we only favor further loss, while without the knife, it will cease and later be absorbed.

When this first period, of four months, has safely passed, there is but little danger of rupture. These include with the older authors abdominal and ovarian cases, but according to the views of Mr. Tait, they are all extra-peritoneal. Here it is generally conceded, that unless urgent symptoms present on the part of the mother, no interference should be instituted until after the child is viable, or if possible not until term.

If we leave it to nature, at term we have false labor, with the death of the child, and later the risk of peritonitis, of suppuration and ulceration, of septicæmia and may then be obliged for the mother's safety to resort to surgical means for the removal of the offending body. Now shall we wait for the death of the child, and then probably have to perform a secondary laparotomy, or shall we attempt to save both mother and child, by what has been called a primary laparotomy? By secondary laparotomy, the mortality has been only about thirty per cent. But every instinct, human and professional, would lead us to attempt to save both; provided, of course, we did not markedly increase the danger to the mother. What then does experience teach with regard to primary laparotomy, so-called, where mother and child are both living, and we essay to save both lives?

To November, 1887, Dr. R. P. Harris had collected twenty-seven cases of primary laparotomies with but three recoveries of the mother, showing the chances of preserving the life of the mother to be but one in nine, for the child one in two, and a still less proportion for the latter living for any length of time. One of these cases in 1880, was the well-known case of our most respected member, Dr. H. P. C. Wilson, which was rendered of still greater interest, in that it was an instance of double pregnancy, the intra-uterine and extra-uterine child going on to term together. This history is contained in the admirable resumé of such cases by another of our valued members, Dr. B. B. Browne.

As occurring since 1881, Dr. Harris has collected ten cases, with four recoveries and six deaths of mothers. Five children survived. Mr. Tait has reported seven cases with six recoveries. This last record would exceed the result in secondary operations, which, as stated, give seventy per cent. of recoveries of the mothers.

Mr. Tait says: "I therefore advocate the principle of saving a child, who has survived the catastrophe of the primary rupture of the tube by being extruded into the broad ligament. If its existence is recognized during life, the mother ought to be carefully watched till the false labor sets in, just as we watch for a case of puerperal hysterectomy, and seize the onset of labor or its early stage as the most favorable time for both mother and child. From this point of view, therefore, neither the time selected nor the details of the proceeding will be influenced save by two considerations; not to operate before the

child is likely to be viable, provided, the delay necessary does not prejudice the mother; and not to delay at all after the death of the child."

The dangers of this operation are from hemorrhage, from peritonitis and from septicæmia.

The two last, may, to a certain extent, be guarded against, but as to the first, while judgment and care may do much, it cannot always be avoided. In about one in every six cases, the placenta is attached to the anterior abdominal wall, when the very first incisions may produce an uncontrollable loss. Even after the operation, the placenta, if left, separating from the sac, may lead to hemorrhage more or less considerable, more or less continuous. For a long period of time, it has been held to be a prime and absolute rule, not to interfere with or attempt to remove the placenta.

In uterine pregnancy, with the severance of the placenta, we have contraction of the uterine wall, we have prompt closure of the open mouths of the severed vessels, but here we have no such base, the maternal surface is neither contractile nor retractile, and such separation must of necessity be followed by hemorrhage. Here again, however, we find of late years some change in practice. In one of the cases, in Harris' first table in 1887, and it was the only one, by Lazarewicz, and successful, the cyst and placenta were drawn out and pursed up in the abdominal wound.

In Prof. Aug. Breisky's case, which was a success, the placenta was removed, and in four recent successful cases, collected by Harris, the placenta was removed in three.

Even with all its dangers, with the good results of the last few years, with the advance of abdominal surgery, with the improved technique of the operation, and keeping in mind the dangerous condition in which the woman is left, with the necessary death of the child after false labor at term, there seems to be a gradually growing disposition in the profession, toward primary laparotomy, thus giving a chance for life to both mother and child.

Treatment in the third period after the death of the child.—Here we have seen whether its death occurs in the latter months or at term, the liquor amnii may be absorbed, and the conversion take place into a lithopedion, which may continue for years, in some instances over fifty, without dangerous results. But, as I have said, no woman is at any time safe, who is a subject of extra-uterine pregnancy; in this case, a death in life, and far more frequently the fetus undergoes decomposition, suppuration is lighted up, with peritonitis or septicæmia.

Two symptoms are invariable in extra-uterine gestation which has gone past the period: A "show" during false labor, and a diminution of size after false labor. (Parry and Tait.)

If we perform a secondary laparotomy soon after the death of the foetus, we have the same danger, as in a primary laparotomy, from hemorrhage, and we have no positive means of determining at what time the placental changes have become such as to prevent this risk. According to Litzman, the placental circulation is not entirely arrested until the fourth or fifth month; therefore, if there are no complications, no dangerous disturbances, we should not operate until after that period. On the other hand, Mr. Tait says: "Not to delay at all after the death of the child." Greig Smith says: "If the foetus is quiescent, operation, although advisable, is not urgent."

With dangerous troubles existing or threatening, we would operate without regard to time, and are justified in so doing by statistics, inasmuch as in secondary laparotomies the chances are nearly or quite seventy per cent.

When suppuration has taken place and the sac has opened externally, or into one of the hollow viscera, abdominal section is imperative, and Mr. Tait insists most strongly upon laparotomy.



ECTOPIC PREGNANCY.

WITH REPORT OF A SUCCESSFUL CASE—LAPAROTOMY.

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In a study of the treatment of ectopic pregnancy we find a most striking illustration of the important service which operative surgery may render in clearing up our knowledge of the physiology and pathology of the different organs and apparatus of the human economy. In former years physiological and pathological studies were hedged in by many unknown quantities and by the vague and uncertain light of obscure surroundings and conditions. To-day we approach the study of all problems with a clearer light and keener appreciation of their relation to experimental observation. In this way the obscurity which surrounded the study of the subject of *fœtation* has been chased away ; both its physiology and pathology have been worked out and simplified by the actual proof of clinical demonstration. What was at one time a mysterious phenomenon is now a simple and easily demonstrated relation of cause and effect.

The ancients were grossly ignorant of the finer adjustments of the laws of ovulation and impregnation. They were unable to account for the cause and nature of those disturbances which resulted in ectopic pregnancy. This darkness and ignorance not only prevailed down to very recent years, but still holds, in a modified degree, up to the very present day. The accepted theories concerning the laws of impregnation and implantation, are speculative, to say the least, and we cannot feel sure that such theories are tenable in the light of the evidence now being offered through clinical observation and study.

It has been taught by physiologists that the contact between the ovum and spermatozoon takes place on the ovary itself, or as the ovum enters the tube. For this statement I have the authority of Bischoff, Foster, Dalton, Flint, Yeo, Carpenter, Chapman, Cazeaux and Lusk.

This theory of contact between the elements makes it necessary that the spermatozoon should pass through the tube until it meets the ovum, and here arouse those nutritive forces, which result in *fœtation*.

The impregnated ovum is now expected to travel through the close and tortuous passage of the tube until cast into the uterus, which has been prepared in advance for its reception. The explanation offered for the passage of the spermatozoon through the tube is defined by Carpenter as due to "its inherent power of movement," or as Foster expresses it, "first, to their inherent vibratile activity, and second, to a retrograde peristaltic movement traveling from the uterus along the tubes." The passage of the ovum through the tube is secured by the movements of the cilia lining its mucous surface, and possibly by a peristalsis in the tube itself. Accepting these theories we find a direct conflict of mechanical principles. A force which is capable of driving an impregnated ovum along a narrow and tortuous tube offers no resistance (according to this theory,) to the passage of the spermatozoon in its efforts to reach the ovum. Why the spermatozoon should be expected to undertake this long and hazardous journey through four inches of tube, defended by millions of cilia, we see no satisfactory reason for in law or function. It seems too true that the place of contact has been defined by analagous studies, by suppositious deductions, and not by actual demonstration. We may therefore question, as has been done by one of England's greatest abdominal surgeons, Mr. Tait, whether the dictum of a physiological ovarian and tubal insemination should not be set aside, and this result be accounted for on the ground of a pathological sequence.

The results following a study of intra-pelvic surgery certainly go far to prove that the physiological field for the union of the male and female elements is the uterine cavity, that only through pathological changes in the tube itself does this contact become possible in any other locality. How this position stands reconciled to accepted opinions upon this subject the limits of this paper will not permit me to explain at any greater length. I may assume with Mr. Tait that the cilia of the normal tube stand sentinel, as it were, against every advance of a spermatozoon whilst they move forward the ovum with earnest toil until it has been cast into the proper soil for its insemination, and for the further development of its nutritive energies. Destroy these sentinels at their post of duty by an inflammatory process and the explanation of a natural law becomes a positive demonstration. It has been shown, and further studies will in my opinion confirm the fact, that the primal cause of ectopic gestation is a desquamative salpingitis. Other causes, may, it is true, act in exceptional ways to effect the same result, but in the manner explained, as in no other, are conditions made so favorable for irregular insemination and implantation. The laparotomy ward and the dead-house both offer abundant proof of the tubal origin of every variety of ectopic gestation, the only exception being a possible occurrence of ovarian implantation in very rare instances. The various sub-classifications all revert directly

or indirectly to this primary source of implantation. Nor is it difficult to explain the abdominal and tubo-ovarian varieties upon this hypothesis. In aid of a more simple physiological and pathological law, we may with perfect deference to facts, assert that, clinically speaking, the surgeon has to deal originally with but one type of extra-uterine foetation, and that he must approach the removal of this condition in its primary manifestations from the single standpoint of an intra-abdominal procedure. It seems to me there is no other rational ground upon which to stand than the accepted position that ectopic gestation belongs to the class of morbid growths with a well defined clinical history, and therefore, that the condition as clearly calls for an abdominal section as the pus tube, ovarian cyst, or other intra-abdominal growths.

The great frequency with which tubal pregnancy occurs can only be explained upon the hypothesis of a pathological influence. A normal tube most undoubtedly resists a false and abnormal implantation. Tubal gestation must therefore be the rarest of occurrences under physiological conditions. Assuming that desquamative salpingitis is at the very root of ectopic gestation, the door is opened for a simple and clear understanding of this abnormality. The spermatozoon in his travels reaches the uterine orifice of the tube, and here stands on watch for the approaching ovum. An entrance to the tube is opposed by the mechanical action of the cilia and by the anatomical structure of the tube itself; but remove these mechanical impediments and its vibratile action is sufficient to carry it along the tube until access to the ovum is obtained, either during its passage along the tube or as it escapes from its follicle in the ovary. Contact between the two elements now occurs; the progress of the fecundated ovum is now impeded, both by its altered size and by the absence of the cilia, which otherwise would impel it forward and cast it into the uterus. The ovum finds a convenient soil for implantation in the close walls of the tube, and here, under conditions favorable to its development, it establishes relations and produces results in accord with its environment. The tube offers for the time being all of the conditions favorable to the growth of the ovum, but from its very thin walls and imperfect anatomical arrangements for continued development, a point is soon reached when its attenuated muscular fibres and peritoneal covering are overstretched, and rupture of its walls is inevitable. The most common seat of rupture, according to Mr. Tait, is through the surface of the tube into the peritoneal cavity. One of the several results here ensues. The ovum is cast out of the tube by complete or incomplete separation, and in accordance with the uncertain elements of this result, perishes or goes on to further development under other conditions of environment. It will be noted here that rupture of the tube does not necessarily imply a rupture of the foetal sac, and that this latter accident at once limits the stage of embryonic development.

How often this history of complete separation in the early weeks of tubal gestation is repeated we have no way of determining, but there can be little doubt of the fact that tubal pregnancy is much more frequent than has been supposed. Its clinical and pathological history arouses such gentle disturbances in many cases where rupture occurs during the first six or eight weeks of gestation that few data are available for a statistical comparison. The milder forms of intra-pelvic hæmatocele, those minor conditions of shock, intra-pelvic pain, localized peritonitis, and of associated febrile disturbances, could undoubtedly be referred in numerous instances to the causative influence of a ruptured and aborted tubal gestation were it permissible to approach the treatment of the symptoms mentioned by abdominal section. Fortunately nature is able to deal so successfully with this condition, in so many cases, that suspicions as to the cause of the intra-pelvic trouble may not even be aroused.

As the weeks of tubal gestation advance before rupture takes place, the foetal ball assumes a more active and threatening attitude. Its presence may be more distinctly recognized, the symptoms dependent upon its growth become more pronounced, and the clinician is confronted with a problem of difficult solution and uncertain behavior. Associated with the local growth is the history of a pregnant state, positive or undecided as the case may be, but all the more perplexing when a somewhat enlarged and altered uterus raises the doubt as to the exact location of the foetal development. At this period of gestation the question of diagnosis is both grave and difficult, yet there are indications and suggestions which aid in its solution. The existence of a growing mass in the neighborhood of the uterus, the presence of intra-pelvic pain, the history of the patient prior to conception, the position, size and relation of the uterus to the growth, all undoubtedly indicate an ectopic tumor. Whether such indications warrant an interference at this stage of investigation, individual judgment and experience must decide. One of several methods of dealing with this uncertain and unsatisfactory class of symptoms and physical conditions deserves consideration. These are the so-called typical cases in which the electricians claim a safe and sure result by the use of the Faradic current. Assuming the correctness of their diagnosis, they proceed to arrest the foetal growth by the destructive influence of the current, and this end presumably accomplished, they leave nature to dispose of the resultant. The fallacy of this line of action is not difficult to expose.

First.—The question of diagnosis is not answered by the method employed in those cases which go on to recovery. The results of this method are purely circumstantial, and clinical experience can be adduced to show the utter unreliability of the evidence offered in support of the value of electricity when a positive demonstration and confirmation of the condition have been made. I may incidentally refer to

the case of tubal gestation reported as cured by Dr. Mann, of Buffalo, N. Y., subsequently operated upon by Dr. Wylie, of New York, and the intra-pelvic condition found to be a hydro-salpinx which had been thus incorrectly treated. All who know Dr. Mann need not be told of his acuteness as a diagnostician and of his skill as a surgeon. The error which he fell into must occur whenever a diagnosis is based upon insufficient proof and is not subsequently confirmed by rational methods of investigation. It should occur to every thinking mind that the electrolytic method is irrational and in no sense free from grave complications and dangers in the presence of an ectopic pregnancy. In the absence of this condition its employment asserts no positive result.

Second.—The resultant of an ectopic pregnancy arrested by electricity is an unsafe quantity subsequently to be accounted for after the foetal death. That it is safely disposed of in many cases of reputed cure by the use of the current goes without saying in those circumstantial cases of assumed diagnosis. That this safe result does always follow in cases where an actual gestation was in force we have numerous illustrations. Mr. Tait has shown that the death of the foetus does not necessarily mean the death of the placenta, that this tissue may remain in the tube and subsequently become a source of danger from its growth, and from hæmorrhage or septicæmia. But, independent of the risk involved from the presence of a dead foetus and its appurtenances left after the use of electricity, there are immediate dangers which must be considered. Dr. J. E. Janvrin, of New York, has reported a case in which he destroyed the foetus by electricity after three applications, given on three successive days, and in which the patient suddenly died from a profuse hæmorrhage from a small artery located upon the peritoneal covering of the tube. It is a well recognized fact that the use of a strong current may cause a rupture of the tube and foetal sac at the time of its application, and occasion a dangerous if not a fatal condition. No one would think of using electricity after a tubal rupture has taken place, for here it can render no possible service. Its value, if it has any value at all, must be confined to a very narrow field, and be limited to those cases of doubtful diagnosis observed during the very earliest weeks of pregnancy.

Whilst I desire to maintain a courteous respect for the opinions of those observers who place confidence in the use of electricity it does seem to me that an honest regard for rational methods forces the surgeon to deal with ectopic pregnancy from one of two standpoints. First, he may remain passive in the presence of the growing mass, and hold himself in readiness to act the very moment a positive indication is offered or, second, he may anticipate a positive indication by immediate action. We have, therefore, to consider the advantages of an abdominal section at the time of actual rupture, or subsequent to this event,

or an abdominal section in anticipation of the rupture. That a tubal rupture will take place sooner or later, there remains little doubt, the exceptions being too infrequent to be considered as contra-indicating a course of action.

It has been shown that in the act of rupture several routes are chosen, and a clinical history follows in accordance with one or the other of these plans. Mr. Tait has simplified this study by designating the result as an intra and extra-peritoneal rupture. In the first instance the tube ruptures into the peritoneal cavity, whilst in the latter rupture takes place into the folds of the broad ligament. In this latter variety, should the amnion be thrown out of the tube intact and its placental attachment remain undisturbed, pregnancy continues. The ovum goes on developing until the sac formed by the peritoneal folds is overdistended and secondary rupture takes place. This secondary rupture now becomes an intra-peritoneal one, and the same results are likely to ensue, as in the case of the primary intra peritoneal variety, viz: intra-peritoneal hæmorrhage, shock and probable death. Maternal death, it is true, is not the necessary result of intra-peritoneal rupture in the early weeks of gestation. The result to the fœtus is problematical. It is asserted that the abdominal variety of ectopic gestation is the result of tubal rupture in those exceptional cases in which the fœtal sac has not been torn and placental attachment has not been disturbed.

A careful study of ectopic pregnancy in its various stages of development up to and after the period of rupture presents such a picture of abnormality and of imminent danger to the woman, that we may approach the treatment of the condition with the strongest conviction of the importance of immediate action. The only uncertain quantity in the equation seeking solution is the single one of diagnosis. Just here we meet with those extremes of opinion which the most careful observers are prone to present. Mr. Tait, with characteristic frankness, the outcome of an unprecedented experience, asserts that a positive diagnosis cannot be made prior to tubal rupture, and under these presumable circumstances with no reliable certainty, until the abdomen has been opened and the ruptured fœtal sac and contents are found. As opposed to this view, Dr. Horace T. Hanks has stated that a positive diagnosis can be made in 95 per cent. of cases we are called upon to attend (*Transactions American Gynecological Society*, Vol. 13, page 368), prior to tubal rupture.

The facts of the case seem plain to one who will collaborate the experience of those who have treated ectopic pregnancy by these several methods. The electricians, who prove nothing by their methods of supposed feticide, are most positive of an accurate diagnosis, whilst those men who open the abdomen and seek to confirm their opinions by direct proof are far less positive of the diagnosis until the evidence

is presented in this manner. With the former class of observers the supposed arrest of fetal development is confirmatory proof of unerring judgment; with the latter class the suspicion is confirmed by actual demonstration. The statistical value of the two methods of treatment is about as reliable as the *rationale* of the two methods of diagnosis. I must side with those who ask for a visible sign, and not with those who accept conclusions upon unreliable testimony.

Practically speaking, the surgeon who starts out to find a tubal pregnancy, must rely upon symptoms and indications and then seek to verify his suspicions by direct proof. At the very outset of this still-hunt for ectopic pregnancy, we are confronted with the fact that in the fewest number of cases prior to the eighth week are there present, either symptoms or indications calling attention to the condition until it has been announced by shock, pelvic pain, collapse and unmistakable evidences of intra-abdominal hæmorrhage. In other words, tubal rupture has actually taken place in advance of grave suspicion. In the very early weeks, if symptoms are present they are for the most part speculative, and therefore largely unreliable. In point of fact there is no reliable route to an accurate diagnosis, except through an abdominal incision. We have therefore the most logical ground for making an exploratory incision with a view to diagnosis and removal of the foetal sac prior to its rupture.

Laparotomy is, in my judgment, positively indicated the moment a growing intra-pelvic tumor is found, and especially so when the symptoms and history point to a pregnant state.

The operation of primary laparotomy, it has been claimed, was performed for ectopic pregnancy for the first time in this country by Dr. Jos. Price, of Philadelphia, in September, 1887. The proposition to establish the primary operation as a legitimate surgical procedure originated with Dr. J. E. Janvrin, of New York City, in 1886. The operation performed by Dr. Price may be regarded as purely accidental. Dr. Price presumed that he was dealing with a pyo-salpinx, and in removing this supposed condition, discovered that he had removed a tubal gestation. Whilst the credit of the first successful case has been conceded to him; the plan and purpose of the operation must be referred to the prior suggestion made by Dr. Janvrin.*

I have asserted in this paper that we have the strongest grounds for making an abdominal section the very moment the pregnant condition is suspected or positively determined. Any other method of dealing with extra-uterine pregnancy simply invites further complications and embarrassments. If this statement holds good for primary

*Since the foregoing was written I have been informed by Prof. Howard A. Kelly, of the Johns Hopkins Hospital, that he did the primary operation on March 20th, 1886, and removed a small fetus $4\frac{3}{4}$ inches in length, in the intact right tube. This patient recovered, and in January, 1887, was delivered of a living female child.

laparotomy, it applies with far stronger emphasis to those cases in which a rupture of the sac has occurred. Here we are brought face to face with positive symptoms, and no postponement seems justifiable unless it be in those exceptional cases in which hæmorrhage and shock are insignificant and septic trouble does not follow, but even here we are again inviting danger by an over-confidence in the reparative forces of nature.

I have previously stated that a rupture of the tube into the peritoneal cavity or into the folds of the broad ligament does not necessarily destroy the viability of the foetus. The primary rupture may be followed by mild and harmless symptoms, and we may hastily assume that no further trouble will occur. This may prove true, and yet in other less favored cases the growth of the foetus continues until secondary rupture supervenes with alarming if not fatal results. This latter result happened in Mr. Tait's early experience, and it is by no means an improbable winding up in those cases which have successfully weathered through a primary rupture. That the foetus will continue to develop after tubal rupture, whether primary, secondary or tertiary, is an established fact, hence it cannot be assumed because shock and hæmorrhage do not prove of sufficient urgency to demand a laparotomy at the time of rupture, that no further trouble will supervene.

The woman is by no means safe so long as she carries around in her pelvis a living foetus, or a dead one with its secundines, blood clots and injured tubal appurtenances. If she escapes trouble, the result must be attributed to uncommon constitutional vigor and fortunate combination of circumstances, and not to the workings of a co-ordinated and reliable reparative process.

The following case will illustrate the behavior and subsequent conduct of these cases of ectopic pregnancy after tubal rupture, and the necessity for a laparotomy to dispose of the results after the foetus has long perished.

Mrs. D., aged twenty-five years, married five years, mother of one child, aged four years. Health good up to February, 1889, and menstruation regular. Menstruation ceased in February and March. She suspected that she was pregnant, but there were no positive symptoms referable to this condition. The last of March she was seized with violent pains in the left ovarian region. Her family physician, Dr. George R. Graham, of this city, was called in, and upon examination detected a small movable tumor to the left of the uterus and very low in the pelvis. He suspected a tubal pregnancy, placed his patient in bed, and kept a close watch over her case.

On April 9th, Mrs. D., was seized with violent pain in the region of the left ovary which was followed by a slight shock and collapse. Dr. Graham was called in, and found that the tumor had disappeared. Next morning menstruation reappeared, but pain continued. I was invited to see the case in consultation, and after hearing the history, was strongly in favor of Dr. Graham's diagnosis. Chloroform was administered and a thorough examination made. No satisfactory condition could be made out. There were some slight indications of a small movable tumor to the left of the uterus deeply seated in the pelvis.

An expectant plan of treatment was advised, and the patient carefully watched for indications for interference. Through rest in bed the pain soon disappeared, and in a few days the patient was able to resume her domestic duties. She continued well until the first week in June. At this time violent pain returned in the left ovarian region, and her suffering became so marked that anodynes failed to relieve the increasing distress. This continued until June the 10th, when I was

again invited to see the case. At this time a small movable mass was felt in the left pelvic region. The patient had emaciated, was growing exceedingly nervous, was debarred from all domestic occupation, and insisted upon some method of relief. After stating the probable cause of trouble, a laparotomy was proposed and promptly accepted.

On June 11th, with proper assistance I made an exploratory incision, and upon introducing the index finger succeeded in finding a tumor mass in the pelvis to the left of the uterus. The incision was enlarged, and after some difficulty the tumor was brought into the field of vision. In attempting to draw it through the incision the sac ruptured and several ounces of clear ascitic looking fluid escaped. The mass was then drawn through the opening, ligated and removed. It proved to be a blood clot in the left ovary, partially ruptured into the folds of the left broad ligament. The clot was not larger than a walnut, but was enclosed in the cyst which I had ruptured. The patient made a prompt recovery, and was free from pain within twelve hours after the removal of the tumor. The specimen was presented to Prof. W. H. Welch of the Johns Hopkins Hospital, for examination. I herewith present Prof. Welch's most instructive report.

EXAMINATION OF SPECIMEN OF OVARIAN OR TUBO-OVARIAN FOETATION
REMOVED BY DR. T. A. ASHBY.

The specimen when received had been hardened in alcohol so that some allowance for shrinkage must be made in the measurements given in this report.

The specimen is composed of the lateral extremity of the Fallopian tube, the ovary, a sac containing blood coagula and foetal membranes, and a unilocular cyst with the corresponding part of the ligamentum latum. These constituents form a single mass removed by cutting through the Fallopian tube, broad ligament and adhesions.

The Fallopian tube measures twelve ctm. in length. Its ovarian fimbriated extremity can no longer be recognized, being lost in the wall of the foetal sac and ovary. The lumen is obliterated after the tube becomes incorporated with this wall. The lumen in the remainder of the tube is patent and of normal dimensions. The remnants of old fibrous adhesions are present on the peritoneal covering of the tube.

The ovary, the foetal sac and the altered ovarian extremity of the Fallopian tube form one continuous mass, the main part of which is composed of the ovary and foetal sac. This mass measures $6\frac{1}{2}$ ctm. in length, $4\frac{1}{2}$ ctm. in width [antero-posterior] and four ctm. in third diameter, the whole mass being irregularly oval.

The outer layers of the ovary are continued into the outer wall of the foetal sac. This sac, which has been widely opened, measures three ctm. in diameter, and projects from the uterine and the superior part of the ovary. It is adjacent to a corpus luteum measuring two ctm. by one ctm. and presenting a festooned margin around a central blood clot of yellowish brown color. Microscopically, the festooned margin presents the character and arrangement of cells usually found in corpora lutea.

The wall of the foetal sac averages about 3 or 4 mm. in diameter and presents a cavity containing a large quantity of extravasated blood. In this extravasated blood and in the margins of the central cavity are present typical branching chorion villi, so unmistakable that there can be no doubt of their nature. No trace of the embryo itself can be found in the already opened sac. As a part of the wall of the foetal sac the ovary containing Graafian follicles, the before mentioned corpus luteum and microscopically numerous ova in abundance are present, measuring 3 ctm. in length and 15 mm. in width.

As already mentioned, the lateral extremity of the Fallopian tube is lost in the wall of the sac, and here the lumen disappears, not being continuous with the interior of the foetal sac.

There is a thin walled unilocular cyst, already opened, lined by cylindrical epithelium provided with cilia, situated between the layers of the broad ligament, and in contact with the Fallopian tube. This sac is 6 ctm. in diameter and appears to be a parovarian cyst.

Diagnosis: There is no doubt that the case is one of ovarian foetation. It is not possible to exclude positively the participation of the wall of the tube in the foetation of the sac containing the foetal remnants, so that the case may be possibly a tubo-ovarian pregnancy.

The parovarian cyst is without any relation to the extra-uterine foetation.

WILLIAM H. WELCH.

Nov. 1, 1889.

EXTRA-UTERINE PREGNANCY.

REVIEW AND DISCUSSION,

by H. A. KELLY, M. D.

Gynæcologist and Obstetrician to Johns Hopkins Hospital.

The paper which has just been read before the Society, by Dr. Miltenberger, is remarkable for its conciseness, its accuracy and at the same time the fulness with which it deals with the most important questions connected with this subject. I regret, for the sake of the discussion, that I cannot take issue with Dr. Miltenberger on many important points. His practical knowledge of the subject, and his willingness to accept the most advanced position regarding the necessity for an early surgical relief, are all that any surgeon could demand.

HISTORICAL.

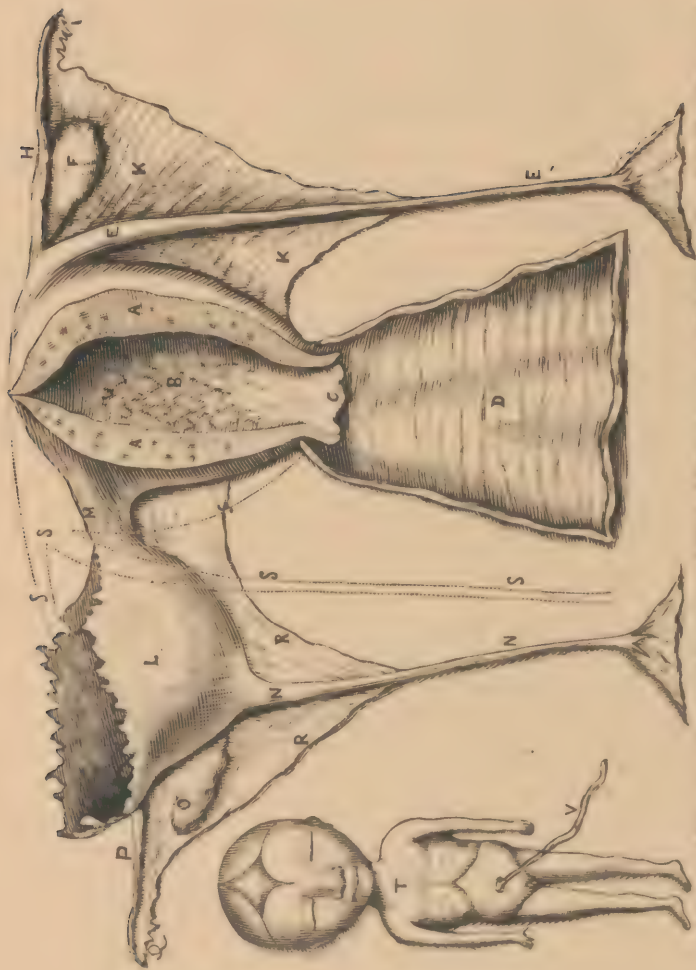
The subject of extra-uterine pregnancy has within the last fifteen years provoked such active discussion and called forth so many valuable memoirs, that it has evidently proven difficult for most investigators to get through the mass of recent work to find out that some good work has been done as far back as the century before the last.

One of the earliest plates of an extra-uterine pregnancy is that of Mauriceau (*), which is accompanied by a very satisfactory description of a case which he saw in the hands of another. I copy Mauriceau's plate; and his description, which is not inferior to some of those presented in the text-books of to-day. You will see by the following what an admirable account he gives. (Fig. 1.)

It runs as follows: "*History of a woman in whose abdomen there was found, after death, a small fetus about 2½ inches long, together with a great quantity of coagulated blood. The history of this case deserves to be carefully examined into to decide whether the fetus, (as believed by many) was generated in the ejaculatory vessel, called the tube of the womb.*"

"On the 6th of January, 1669, in the village Corrari, I saw in the hands of a chirurgus called Benedict Vassal, a uterus, the picture of which is shown at the end of this chapter, which the same Chirurgus had a short time before removed from the body of a woman aged 32, who died after three whole days of torture with the most agonizing pains in the stomach, through which she had fallen into frequent fainting spells and the most violent convulsions.

*Mauriceau, Paris, 1671, Page 60.



No. 1. —Mauriceau's case of ruptured Tubal Pregnancy in the year 1669. T is the detached fetus. N N the Round Ligament. P, the outer portion of the Right Tube. O, the Ovary. L, is the Sac, ruptured on its free border, from which the fetus has escaped. S S represent the original outline of the Uterus, Tube and Ligament. H, is the Left Tube. F, the Left Ovary, and E, the Left Round Ligament. A A are the thickened walls of the Large Uterus, which has been laid open, the inner surface of which is seen at B. D, is the Vagina.

"This woman had borne eleven children at term, but in her twelfth pregnancy, at about 2½ months the womb dilated in the direction of the right horn, and unable to stand distension, ruptured. The fœtus was cast out at once and found among the intestines of the mother with a great quantity of coagulated blood in the whole lower abdomen. Many physicians, chirurgi and other students of nature did as did we ourselves, betook themselves to this chirurgus to see this uterus (which he showed for a prodigy, persuading them that it was formed in the ejaculatory vessel, which Fallopius calls the trumpet of the womb.) They believed at once, without any more investigation, that this was just as the said chirurgus told them, and that this case confirmed stories of a like nature narrated by Riolanus. However, I examined the parts of that uterus most carefully and attentively, and it was known to me that those who had fallen into this opinion were in the error whither the chirurgus was leading them, and for this reason, at that very time, I took a drawing of the womb as it then was, and this is a more faithful, true drawing than that which the chirurgus caused to be engraved on brass after an entire month, at a time when the uterus retained almost nothing of its primitive form, and was spoiled by the handling of a thousand men or more who had seen the uterus, pulled it, disturbed it, turned it inside out that they might examine it." * *

"Many have brought forward this case to prove to us that the testes" (ovaries) "of women are full of little ova which at the moment of coitus, freeing themselves and emerging from the body proper of the testes" (ovaries) "are borne into the uterus through the tube afterwards to serve for the generation of the fœtus: and one of these so-called ova had by chance remained in the tube of this woman, instead of passing forward into the uterus, and that this was the cause of her death. Regnus Graaf among others holds this opinion, for the confirmation of which he brings forward the figure of this uterus which he painted from this case which the chirurgus of whom I have spoken, had already given to the public; as one finds it on the 260th page of his book *on the generative organs of women*; but any who will, carefully and without prejudice, examine the following figure which is most faithful and faultless and at the same time examine into our reasons, will find that we have given another demonstration and that we believe that to be the true explanation." (Translated from Latin.)

Although Mauriceau gave such a good description of the case, he did not believe that it was a true tubal pregnancy, but considered it a hernia from the right horn of the uterus.

This is clearly an extra-uterine pregnancy, but it is open to some doubt as to whether it is tubal or interstitial.

This case was, strange to say, the source of an acrimonious discussion, and it would seem that here started the heritage of strife which has followed extra-uterine pregnancy for over two hundred years.

The best plates which I have ever seen of the abdominal form of extra-uterine pregnancy are these life-size plates in the work of Deutsch, published in 1792, (1) which I here exhibit to the Society. [v Fig. 2.]

(1) *De Graviditate Abdominali singulari observatione ad tab. IV. aeneas illustrata, cum quibusdam ad historiam litterariam additamentis, etc.*, Halæ 1792, C. F. Deutsch.



No. 4.—Case of Deutch in the year 1752. ABDOMINAL PREGNANCY. Child is seen lying by the side of the mother, whose abdomen has been laid open. It is still attached by the cord to the Placenta, which is implanted in the lower part of the Abdominal Cavity. The colon H F K and the small intestines E F are seen pushed up above, the right and left lobes of the Liver B and C also visible.

The next important step was taken by Schmitt,[†] followed by Breschet,* who discovered and gave a careful description of the interstitial form.

In 1826 appeared this work by Pfaff of Leipsic, with a series of admirable plates exhibiting the pathology, with a number of specimens, of the interstitial pregnancy.

Loschge (2) was the first to recognize the subperitoneal form.

The following case here figured is an excellent clear observation by J. Guentz, Lipsiae, 1831. [v. Fig. 3.]

A young woman, 20 years of age, was brought into the Clinic suffering from severe abdominal pains. She died, and at the post mortem the fœtus was found in the abdomen ten inches long from head to heels.

Dezeimeris[†] followed next with an elaborate classification based on a scientific analysis of a number of cases. The subperitoneal form was not, however, first described by Dezeimeris as usually ascribed, but by Loschge.

In spite of all this good work in the description of the various forms of extra-uterine pregnancy, as well as in the attempt to furnish a scientific classification, it has remained for a later day to subject the cases to the test of careful microscopic study, by a closer analysis determining more accurately the species, which have in the past been seriously confounded.

Much harm has been done and our progress seriously retarded through the long useless discussion provoked by the unwarranted assertions of some writers that there was but *one primitive form* of extra-uterine pregnancy.

The dawn of a new era in the critical examinations of the specimens date from the work of Prof. Werth of Kiel, entitled "Beitrage zur Anatomie und zur Operativen Behandlung der Extrauterinschwangerschaft, Stuttgart, 1887." So difficult is the anatomical examination of advanced cases that I feel that no present writer is fully competent to pronounce upon the origin and present site of cases of advanced extra uterine pregnancy who has not carefully studied this work.

ORIGIN.

Where does extra-uterine pregnancy occur? It may start in one of five places—1, in the ovary, 2, free in the abdominal cavity, 3, between the ovary and the tube, 4, in the tube, and 5, in that part of the tube lying within the uterine wall.

[†]Beob. der K. K. Med. Chir. Joseph Acad in Wien Bd. 1, 1801.

*Mem. Sur une nouvelle espece de gross. extra-uterine. Paris, 1828.

(2) Arch. f. Med. Erfahrung Bd. 2. v. Werth Beit z. Anat. & z. Operativ. Behandlung Extrauterinschwangerschaft, Stuttgart, 1887.

[†]Jour. des Comais, med. chir, 1836.



No. 3. Güentz's case, Leipsic, in the year 1831. The Extra-uterine Fœtus is here seen still attached by its cord to the ruptured left tube, which is filled with coagula. The ovary and fimbriated extremity of the tube are well shown just above the legs of the fœtus. The enlarged Uterus is seen in the middle, and on the right side the ovary and tube are shown intact.

Possibly the ovum may primarily become impregnated and rest in the **FREE ABDOMINAL CAVITY**.

The **OVARIAN** form of extra-uterine pregnancy, in which the impregnation takes place within the ovary and in which the ovary develops a sac containing the fœtus, undoubtedly occurs, and it is to Dr. Miltenberger's credit that he recognizes the fact. This is clearly proved by Leopold's case in which after it had been carried for 35 years, he removed a lithopaedion in the ovary.

To determine an ovarian pregnancy it is necessary microscopically to recognize the tube with its fimbria intact on the surface of the tumor. The tumor must hold some such relation to the surrounding parts, as does an ordinary ovarian cystoma. It is of the utmost importance to show the connection of the tumor to the uterus on the inner side by the ovarian ligament, a point as important here as the relation of the round ligament in the diagnosis of the interstitial form.

Microscopically the discovery of ovarian tissue, corpora lutea, and Graafian follicles in the walls of the tumor complete the demonstration. All of these requirements have been met.

The **TUBO-OVARIAN** form of extra-uterine pregnancy is one difficult to demonstrate, and until recently, justly subjected to much doubt. I think that the case presented by Dr. Ashby of the Society, however, lends much to the probability of its occurrence. This form must be rare and when it occurs most probably ruptures early.

That the ovum may become impregnated in the **TUBE**, in ampulla or isthmus, all recognize, and that the secondary tubal forms are the sub-peritoneal and the intra-peritoneal, are equally conceded.

The **INTERSTITIAL** form of pregnancy, where the ovum lodges in the narrow portion of the tube, lying within the uterine walls has been repeatedly demonstrated since the days of Schmitt, in 1801. It is well to remember that this form may terminate in one of three ways: first, by rupture and death, second, by becoming uterine and going on to term, or third, by going on to term *in situ*.

The tubal pregnancy is practically the most interesting because of its greater frequency, but it would be about as irrational to neglect the other forms as to ignore the existence of dermoid cysts because ovarian cysts are so common.

THE CAUSES OF TUBAL PREGNANCY.

The simplest idea is that absence of cilia within the tube must seriously retard the progress of the ovary towards the uterus. I do not, however, attach great importance to this fact in view of more probable causes to be mentioned, and *have seen the cilia on the epithelium of the tube in a case of extra-uterine pregnancy* advanced beyond term, upon which I operated a few days since.

I consider the observations of Fehling and Leopold showing that polypi are frequently found in the tube of more importance, although we cannot say how important until we know just how common polypi are in normal tubes. I do attach far more importance, however, to the fact that every week I find in the operating room tubes bound down in the pelvis, or crossed by fibrous bands with the fimbriated extremities glued down to the ovary so as to be incapable of receiving the ovum except from a very limited area. I can readily see how such adhesions may cause an obstruction and an ileus of the tube, and thus prevent the onward progress of the ovum.

DANGER OF TUBAL PREGNANCY.

The dangers of tubal pregnancy have been very variously estimated. While one author (1) thinks that 98% of all cases die when left to nature, and some even go so far as to speak of it as *necessarily fatal*, another (2) estimates that 76 cases out of 132 cases terminate favorably when left alone.

J. Veit* in his paper on retro-uterine haematocoele estimated that of 146 cases 28 % were ruptured tubal pregnancies, of which 7 out of 33 died, that is to say 21 %.

We are hardly in a position yet to determine the actual percentage of mortality in extra-uterine pregnancy when left alone. There is at present in the English speaking race, too much of a tendency to account all cases of haemato-salpinx or haematocoele as extra-uterine pregnancies without further question. The published cases also are for the most part those which have died suddenly or to which attention has been called by the operation, when it is always presumed that the patient would have died had not the operation been performed. This part of the subject certainly needs a more careful sifting.

The danger of rupture in the different periods of extra-uterine pregnancies is well shown in the table compiled by Hennig in which he finds in a series of 64 cases, that

5 ruptured in the first month,
22 in the second,
17 in the third,
16 in the fourth,
8 in the fifth,
1 in the sixth,
1 in the seventh,
1 in the eighth,
1 in the ninth, and
2 in the tenth month.

It must be borne in mind, however, that few cases come to the latter months, and that rupture then does not constitute the chief danger.

1 Puech.

2 Hecker.

*Eileiterschwangerschaft Stuttgart, 1884, p. 14.

RELATIVE VALUE OF MOTHER AND EXTRA-UTERINE CHILD.

In view of the great dangers threatening the mother, at all times, in the course of an extra-uterine pregnancy, in view of the very small probability, not one in thousands, of the birth of a living child at term, in view of the still smaller probability of the delivery of a healthy and well formed child, and in view also of the frightful dangers to the mother consequent upon the birth of a living fully developed extra-uterine child, I would insist that the extra-uterine sac must from the moment of its discovery to its complete extirpation be looked upon as a malignant mass. I would insist that the whole consideration throughout, from beginning to end, should simply and solely be the welfare of the mother.

DIAGNOSIS.

Can we make a diagnosis in these cases is a question which is every day being asked and often discussed with much heat.

I will answer here from experience. *In many cases the diagnosis can be made with certainty*;—a certainty approaching that attained in the diagnosis of ovarian cyst—or fibroid tumor. *

I know that it can be diagnosed because I have myself positively diagnosed the condition in several instances and verified the diagnosis by operation.

Given a woman with cessation of menstruation for two or three months, with some enlargement of the uterus and the formation of a cystic tumor lateral to the uterus, with the appearance of milk in the breasts, with the expulsion of a membrane resembling a cast from the uterus, associated with or followed by unusual pains in the lower abdomen, followed by a shrinkage of the sac,—given these data and you have a set of signs simulated by no other condition than extra-uterine pregnancy. These are the signs upon which I based my diagnosis in Mrs. B's case, in 1885.

REPORT OF CASES.

Mrs. B., age 22, married three years, had had one child and one premature still-birth. The child was born eleven months previously, since which time she had had constant pain in the right leg. She applied to me early in December, 1885, stating that her monthly sickness had been regular up to July; from July until the middle of November she had not menstruated. Menstruation came on in the middle of November with a discharge of something like a piece of flesh. In October she had noticed a lump on the right side low down which had pained her severely; the pain was constant until the flow came on when it was relieved. I found a slight amount of milk in the withered breasts and a little wax on the nipples, and at my first examination I discovered a very smooth tense elongate tumor anterior to the cervix lying far back in the sacral hollow. The tumor was easily felt over the whole extent of the anterior vaginal wall ovoid and moderately movable,—extending above, half-way to the umbilicus, it had a peculiar tense fluctuant feeling. The uterus lay small and retroposed, reclining in the hollow of the sacrum.

At her next visit she thought she must be pregnant as she had felt slight movements. I then did not feel the uterus so clearly, and thought that I must be dealing with an extreme ante flexion of the pregnant uterus.

On the sixteenth of December, a month after the last flow, she had a slight bloody discharge without pain, again on the twelfth of January she had a free, colored discharge lighter than regular menstruation; On the eighth of March she had a regular free flow lasting five days.

A note on the thirteenth of March states the following: "uterus small low down in the hollow of the sacrum. On raising finger to anterior vaginal wall an ovoid, tense cyst felt on the right side, about 12 cm. in length, by 7 cm. in breadth. The axis of the cyst lies in the plane of the superior strait; its anterior extremity lies at the symphysis pubis to the right, and its posterior extremity is at the right cornu uteri. A well defined sulcus lies between the tumor and uterus, which are connected by a short but easily recognizable pedicle. The tumor is very sensitive to pressure; It is very smooth, and has a remarkable rubber-ball elastic feeling; there is much tenderness on the left side low down where there is an indistinct worm feeling about the retroposed cornu uteri."

The tumor when first seen had extended out of the pelvis halfway up to the umbilicus, and had therefore very markedly diminished in size while under observation. The diagnosis of an extra-uterine pregnancy, was positively made and invitations were sent to Drs. R. P. Harris, Charles H. Thomas, Paris G. Clark, Hunter Robb and Walter C. Freeman, to be present at an operation for extra-uterine pregnancy. The operation was performed on the twentieth of March, 1886. I felt it necessary, at that time, in deference to the conservative views held relative to abdominal surgery to carefully formulate my reasons for operating in a case presenting no symptoms of immediate danger. My reasons were these:

First, The patient was suffering constant pain, and in a deteriorated condition of health on account of the tumor.

Second, Being an extra-uterine pregnancy there was danger of later suppuration, in spite of the fact that the fœtus was dead.

Third, I urged that the right to operate to remove an extra-uterine cyst, although quiescent, was fully equal to the right to remove a dermoid cyst of the same size.

Fourth, I urged the facility and the safety of the abdominal operation as recently improved, and

Fifth, After the operation I called attention to the pasty and unhealthy looking condition of the contents of the sac.

The patient after proper preparation was placed under the influence of ether and an incision made, beginning one inch above the pubis, and extending to within an inch and a half of the umbilicus, through fat an inch thick. The linea alba felt under the finger like a cord discovered by this land-mark it was easily opened, the peritoneum nicked, the incision enlarged and the fingers passed in, coming at once in contact with the smooth surface of the tumor. Upon slipping the fingers down into the pelvis, the uterus was found to be a depressed, softish mass displaced to the left, with its body ante flexed. The tumor was a uniformly smooth ovoid mass lying within the pelvis

with its anterior pole at the symphysis. v. fig. 4. It was delivered through the abdominal cavity with some little difficulty as it was so smooth, round and movable, that at first it slipped around in the pelvis like a ball in a cup, in spite of every effort to elevate it. It was finally brought through the incision by passing two fingers in front and under it and thus throwing up the anterior pole, revolving it a little on the axis of its attachment to the broad ligament and then drawing open the abdominal incision and pressing the walls down on either side, when the tumor slipped out. The pedicle an inch and a half in length, lay on the upper margin of the right broad ligament. The tumor thus arose from the free surface of the tube about midway between its uterine and fimbriated extremity. The ovary and the whole of the tube were raised with the tumor and altogether transfixed and tied off with a silk ligature. The abdominal cavity was drained, and the incision closed with silk worm gut sutures. The entire duration of the operation was 40 minutes. The patient made a good recovery.

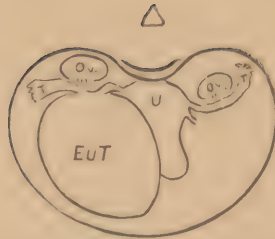
As soon as the unruptured extra-uterine tumor was removed Dr. Thomas incised it, a hand protruded and the bones of the head were seen in the opening. The placenta was cut through on the free surface of the tumor. The fœtus was a shrunken but well formed male, 12 cm. long from vertex to rump. (v. Fig. 5.) It had a brownish exsanguine appearance. The cord was 5 inches in length, twisted from right to left, the sac was ovoid, 3 inches long, of a dull reddish color on removal. The walls averaged about 3 mm. in diameter. I regret that I cannot give a fuller description of the specimen which has been unaccountably lost.

I saw her again on the 25th of October, 1886, when she was six months pregnant, the uterus up to the navel, and the umbilical circumference 92 cm. The abdominal scar was broad and deeply pigmented. There was no pigmentation about a small scar situated laterally at a point from which a tumor had been removed in childhood.

I delivered her again in January, 1887, at term, after a difficult forceps labor.

Another case, that of Mrs. G., which I spoke of as being under treatment at the time I reported Mrs. B's case was also seen by Dr. Harris, and a positive diagnosis of extra-uterine pregnancy was made. This woman refused operation, passed through a period of great suffering and several attacks of internal bleeding. The sac, which when she first came under observation in February, 1876, filled the pelvis, crowding the uterus forward, behind the symphysis and extending nearly up to the umbilicus, diminished rapidly in size until in the middle of April, when the note states that the uterus was normal in shape, anteflexed, and a softish mass lay behind, which might easily escape detection. Dr. Harris and I both considered this a case of natural cure.

The next patient was a mulatto woman who had survived the period of rupture, and the bloody mass left in the pelvis had undergone suppuration. The diagnosis was here made by Dr. J. M. Anders, of Philadelphia, and I removed at operation a rotten mass of tube and ovary at the right broad ligament, handfuls of clots of blood breaking down into pus and the whole of the gangrenous omentum up to the transverse colon. This patient was in a very weakened state at the time of the operation and her pulse remained over 150 for three days. Dr. Anders called two days after the operation to learn when she had died. He found that she was recovering, and she is now well.



No. 4 shows the relation of parts in the case of Mrs. B. upon looking down into the Pelvis through the Superior Strait U is the Uterus. OV the Ovaries, and T the outer extremity of the Tubes. Eu. T is the large unruptured Extra-Uterine Sac springing from the Right Tube, lying with its anterior extremity behind the Symphysis Pubis, and the posterior at the right Sacro-iliac Junction.



No. 5 is a representation of the foetus in my own case, that of Mrs. B. in which I removed an unruptured Tubal Sac.

The next case was one of extensive haematocoele formed by ruptured tubal pregnancy in the early months. She was a patient of Dr. C. P. Noble. Dr. Noble called me in consultation and we both diagnosed an extra-uterine pregnancy which was confirmed at the operation by finding a large piece of the placenta clinging to the wall of the tube. This patient also recovered.

My most recent case was an operation on the 6th of May, 1890, in the presence of 32 spectators in the Gynecological operating-room in the Johns Hopkins Hospital. These gentlemen had been invited to witness an operation for extra-uterine pregnancy, and before beginning, I stated "that this case was positively one of extra-uterine pregnancy," further stating that "I had always insisted upon the possibility of diagnosing some cases with certainty; and if this should not prove to be a case of extra-uterine pregnancy, I would never again contend that it was possible to diagnose the condition." The operation was proceeded with, and a fully developed foetus removed from among the intestines, which had escaped from a ruptured tubal pregnancy on the right side. The woman was an unmarried mulatto who had never borne a child. She had some milk in her deeply pigmented, withered breasts. Her flaccid abdomen was full of scars, evidences of its former distention. The vaginal outlet showed a torn hymen but no caruncles. I felt the womb behind the symphysis and found a tumor behind it extending from the floor of the pelvis up into the left hypochondrium. In this mass it was thought that foetal parts could be felt.

She stated that up to October, 1889, her abdomen had been very much swollen. Since October it had diminished to its present flaccid condition. She also presented a distinct history of cessation of menstruation, with an irregular return of the flow. There was no history of any spurious labor pains. A full account of this important case will appear in the Johns Hopkins Hospital Reports.

TREATMENT OF THESE CASES.

The treatment is that of a malignant tumor. Get it out as soon as you can consistently with the safety of the mother.

The old treatment by injection of the sac was an interesting and rational experiment of the earliest workers.

It is to America's credit that before the time of antiseptic surgery, her surgeons devised a comparatively harmless, satisfactory and successful mode of treatment in the use of electricity. It was a stupid error to tirade against this method of treatment upon the gratuitous assumption that needles were stuck into the sac. A little more acquaintance with literature would have prevented this serious error, and the silly accusations based upon it. I am glad that Dr. Miltenberger has again called attention to it.

I have no fault to find with those who use electricity in the earlier months while holding themselves in readiness to perform an abdominal section upon the appearance of the first untoward symptom. It is well adapted to those cases which have ruptured into the broad ligament, and are very difficult to enucleate. These are cases where we want to stop the growth of the foetus, and where we need not be in haste to operate.

I believe it would in all cases be best to extirpate at once all sacs offering a distinct pedicle. The question as to the best mode of treatment in the latter months while the fœtus is still living, is under judgment and I confess I have not positively made up my mind about it.

To summarize again, the extra-uterine pregnancy is a foreign body which should be removed as soon as safe to the mother.

Determine as accurately as possible its presence.

If favorable, (pediculated) operate at once.

If there is a recent rupture with profound shock, it will require great nicety of judgment to determine whether to operate at once or wait until the patient has rallied a little ; err on the operative side.

If it is a broad ligament rupture, stop the growth by electricity and wait.

If later, after the sixth month, it is admissible to watch the case until term, to operate aseptically, to remove the fœtus with the sac and placenta if possible, if not, to remove the fœtus and close the abdomen without drainage.

The following is a list of papers exhibited to the Society by Dr. Kelly, in the discussion of Dr. Miltenberger's essay.

Aschern, Heinrich—Wurzburg, 1841. Ueber den Sitz der Placenta in den Muttertrompeten.

Annacker, Ernest—Berlin, 1887. Zur Behandlung der Extrauterinen Schwangerschaft.

Beaucamp, Eugene—Stuttgart, 1884. Ueber Tuboovarienschwangerschaft.

Baumgarten, Robert—Berlin, 1883. Ueber einen Fall von Extrauteriner Schwangerschaft.

Buckmaster, A. H.—Brooklyn, (207 Clinton St.,) 1888. Case of extra-uterine pregnancy ; Embryo destroyed by a twenty milliamperes current without interruptions ; together with remarks on the best manner of using electricity for this purpose.

Cramer, Hermann—Berlin, 1886. Ueber Tubenschwangerschaft.

Czempin—Deutsche Medicinische Wochenschrift, Nov. 27, 1886.

Treatment of Martin's cases.

Zwei Fälle von Extrauterin schwangerschaft, Heilung nach Laparotomie.

Carus, Albertus Gustavus—Lipsiæ, 1841. De Graviditate Tubo-Uterina seu Interstitiali.

Deutsch, Christ. Fridericus—Halae, 1792. De Graviditate abdominali, singulare observatione ad Tab. IV, Aeneas Illustrata, cum Quibusdam ad Historiam Litterariam Additamentis, huc Facientibus, etc.

Doring, Heinrich August—Halle, 1872. Ueber Tubenschwangerschaft.

Dreessen, Adolphus Bernhardus Claudius—Kiliae, 1867. Nonnulla de Graviditate Abdominali.

De Drost-Hulshoff, Jos.—Berlin, 1819. De Gravid. Extrauterina, I—D.

Diemerbræck—Opera omnia medica et anatomica. Ultrajecti, 1685, page 135, foetus in tubis concepti et formati.

Eastman, Joseph—Indianapolis, 1888. Intraligamentous Tubal Pregnancy; successful removal by abdominal section of a four pound living child with all its appendages. (Photo. of mother and child.)

Ehm, Franz—Greifswald, 1888. Ueber die operative Behandlung der ectopischen Schwangerschaft mit Berücksichtigung eines Falles von Laparotomie bei vorgeschrittener Graviditas extrauterina nach dem Absterben der Frucht mit conservativer Behandlung des Fruchtsackes und Ausgang in Genesung.

Falk, Edmund—Berlin, 1887. Ein Fall von Tuboovarialschwangerschaft.

Galie, Georg—Breslau, 1885. Ueber Nebenhornschwangerschaft.

Galezowski, Bronislaus—Breslau, 1869. Eine ausgetragene Tubenschwangerschaft.

Glahn, John vore—Berlin 1888. Ueber Extrauterinschw.

Guentz, Justus—Lipsiæ, 1831. De Conceptione Tubaria Duabus Observationibus Lipsiæ Nuper Factis Illustrata.

Heineken, Gustav—Halle, 1881. Ueber Extrauterinschwangerschaften mit Berücksichtigung eines Falles von Laparotomie bei Graviditas ovaria.

Held, Fredericus Ferdinandus—Lipsiæ, 1834. De Graviditate Extra-uterina Primaria, accedit Observatio Graviditatis Abdominalis Primariæ cum Descriptione Lithopædi Inde Exorti.

Holck, Rudolf—Berlin, 1887. Ueber Abdominalgravidität.

Haake, Julius Hermannus—Lipsiæ, 1859. Nonnulla De Graviditate Abdominali Adjectus est Graviditatis Abdominalis Casus.

Hennig—Centralblatt für Gynäkologie, Nov. 26, 1888. Ueber Tubenschwangerschaft, Hämatocele, Extirpation beider Befunde.

Haasio, Guilielmo Andrea—Lipsiæ, 1826. De Graviditate in Substantia Uteri seu Interstitiali.

Kregeloh, August—Greifswold, 1869. Ueber Extrauterinschwangerschaft.

Jockwer, M.—Dusseldorf, 1877. Ein Fall von Graviditas interstitialis.

Klau, Hugo—Berlin, 1881. Ueber die Therapie bei Extrauterinschwangerschaften.

Langner, Karl—Greifswald, 1886. Ein Fall von ausgetragener Tuboabdominal schwangerschaft.

Leopold, G.—Centralblatt für Gynäkologie, No. 3, 1879. Leipzig Ueber die Polyen der Tubenschleimhaut bei interstitieller Schwangerschaft.

Lober, Guastav—Jena, 1886. Ein glücklich geheilter Fall von Extrauterin schwangerschaft.

Laupus, F.—Göttingen, 1876. Ein Fall von graviditas extrauterina mit Ausgang in Genesung, 27 Jahre nach ihrem Beginne, durch Elimination und Extraction der Fœtalknochen per rectum.

Moreau, M. Alexis—Paris, 1853. Des Grossesses Extra-Uterines.

Meyer, Adolf—Erlangen, 1874. Ein Fall von Extrauterinschwangerschaft mit glücklichem Ausgang.

Maass, Adolf—Berlin, 1887. Beiträge zur Tubenschwangerschaft.

Muller, Julius—Strassburg, 1884. Ueber die Diagnose der Extrauterinschwangerschaft.

Nonnig, Paul—Berlin, 1880. Beitrag zur Kasuistik der Extrauterinen Graviditat und deren Ausgang in Lithopadionbildung.

Otto, Heinrich—Griefswald, 1871. Ueber Tuben schwangerschaft mit Berücksichtigung eines Falles von Graviditas tubaria molaris hydatidosa.

Oltmann, Heinrich—Bonn, 1885. Ueber Graviditas tubaria.

O'Hara, Michael—Phila., 9th International Med. Congress, Vol. II. Operative Interference in Early Extra-uterine Pregnancy.

Pauly, Wolff—Berolini, 1838. De Graviditate Extrauterina Adjecta Casus Historia.

Sassman, Ernst—Erlangen, 1880. Ein Fall von interstitieller Schwangerschaft.

Simon Hugo—Berlin, 1885. Die Graviditas tubo-uterina sive interstitialis, beleuchtet an der Hand des Kuge' schen Symptoms des Fundusdrehung.

Saxinger, Dr. Johann—Tubingen, 1875. Ein Fall von günstig abgelaufener Bauchschwangerschaft.

Sommer, Ferd. Bernard Guil.—Gryphiæ, 1855. De Graviditate Extrauterina, Accedit Descriptio Memorandæ Cujusdam Graviditatus Tubæ Falloppianæ Sinistræ.

Sachs, J.—Berlin, 1881. Ueber die Indication zur Laparotomie bei Extrauterinschwangerschaft.

Strobach, Waldeck—Berlin, 1887. Ueber Behandlung des Fruchtsackes und der Placenta bei laparotomierter Graviditas extrauterina.

Tait, Lawson—Critique of Lancet, Jan. 19, 1889. Lecture on Ectopic Pregnancy and Pelvic Hæmatocele.

Veit, J.—Geburtshilflich-gynäkolog. Gesellschaft, 1877. Ueber den Zusammenhang der Hæmatocele mit der Tuben schwangerschaft.

Veit, J.—Stuttgart, 1884. Die Eileiter-schwangerschaft.

Werth, Beitr. 2 Anat. and 2 Operativ. Behand d. Extrauterin-schwangerschaft, Stuttgart, 1887.

GENERAL DISCUSSION.

REMARKS BY DR. P. C. WILLIAMS.

Mr. Chairman.—I feel under great obligations to Drs Miltenberger, Ashby and Kelly for the very elaborate and able papers they have given us on this very important and interesting subject.

In May, 1889, I reported to this society the following case, which I now request permission to repeat, in order that I may call attention to one or two important features of the case.

1st. In reply to Dr. Kelly's question, "can extra-uterine pregnancy be recognized with certainty?" the following case shows conclusively that it can.

A CASE OF TUBAL PREGNANCY TERMINATING SPONTANEOUSLY PER VAGINAM.—By P. C. Williams, M. D.

January 29, 1889, I was called to see Mrs. B., whom I had attended in 1888 for a severe vaginismus, which was greatly relieved when I left Baltimore in September, 1888. I found Mrs. B much improved in appearance since I had seen her in September. She had gained much in strength, had an excellent color, and was able to exercise with more comfort than she had done for many months. I was surprised when she told me that she thought she was pregnant, and she desired me to ascertain whether it was true.

Upon inquiry she informed me that she had menstruated freely about the *middle of October*—had not menstruated in November or December—but during that time had decided leucorrhœal discharge, which was frequently colored either *red or brown*. At the time of my visit (Jan. 29th) her strength and appetite were good, her figure plump and full, and her color excellent. There was also increased fulness of the mammary glands—but there was no "morning sickness," no nausea at any time.

External examination revealed nothing special, except enlargement of abdomen and *tenderness over the pubic region*.

Examination with speculum revealed vagina and labia of natural color, the cervix uteri normal in size, but rather *soft* to the touch; the *os uteri patulous* and emitting a free mucous discharge. Under these circumstances I felt satisfied that she was not pregnant, and so expressed myself to her.

She still insisted that she was pregnant, and wished me to explain her failure to menstruate during the past two months, and her increased fulness of abdomen and breasts. This I was unable to do.

During the month of February I kept her under observation. During that time there was a gradual and steady increase of more or less bloody mucus, accompanied with pain of considerable severity, which *she* always located "in the region of the bladder."

During the latter part of February I found increased fulness and hardness over the pubic region, extending toward the left side, and I then thought that I could detect the outline of a fœtus. Further investigation proved this to be true.

After careful external examination I inserted two fingers of my left hand into the anterior "cul-de-sac," and then by steady pressure upon the abdomen with my right hand I could distinctly feel a tumor descend upon them, and I could readily produce abdominal ballottement. By cautious pressure with my hands—one in the vagina and the other on the abdomen—I could distinguish the outlines of the body and limbs of the fœtus. Being thus satisfied that she was pregnant; and also feeling convinced that the fœtus could not be *in utero*, I determined to settle that question. Accordingly I inserted a vaginal suppository about *two inches long*—which I had been using to allay the pain—into the cavity of the uterus. It entered the *os* with great facility, and this induced me to introduce my finger *in utero*; which proved beyond all doubt that the uterus contained no fœtus. This convinced me that it was a case of *extra-uterine pregnancy*.

Furthermore, the constant increase of bloody discharge from the vagina led me to suppose that I had to deal with a case of *tubal pregnancy*—with the fœtus just outside the *left horn* of the uterus. This bloody discharge continued with more or less abundance during the month of March, and about the 20th of the month the pain became more and more severe, and it required large doses of opium to restrain it within the limits of endurance.

At this juncture, viz., early in March, I communicated my opinion to Prof. Howard, and I told him that I would probably have to call upon him to relieve my patient by a laparotomy. Being anxious to save my patient the burden of thinking over the impending operation, I determined not to inform her family of her grave condition until circumstances would demand active intervention. Finding, however, that my reticence subjected me to very severe criticism from her friends outside of her family, I concluded that I ought to explain the situation to her husband.

This I did fully on the evening of March 30th. Early the next morning, April 1st, her husband came for me, and said that his wife had suffered intensely all night, and that the anodynes could not control the pain. I went with him immediately, thinking that the time for the laparotomy had come.

When I reached the house I found her suffering great agony. I at once put her under chloroform, and proceeded to examine per vaginam. I introduced my finger *in utero*, and to my great surprise and unutterable relief, I discovered that the *fœtus had descended into the uterus*, and that my patient *was in labor*. After three hours she expelled a fœtus about *four months old*, which gave feasible evidences of life and then expired. The placenta was extracted by gentle traction upon the cord. This was followed by slight hemorrhage, which gradually diminished under the use of ergot until it assumed the quantity and quality of ordinary lochial discharge.

For some days there remained an area of induration, about half the size of my hand, in the left iliac region. This induration gradually decreased in area, until to-day (May 10th) there is a hardness resembling a tumor about the size of an English walnut, a little to the left of the median line, and about half way between the umbilicus and the pubis. With this exception my patient has returned to her normal condition, and I hope will soon be able to resume her household duties.

Thus has terminated favorably a case unique in my experience; and one that caused me grave anxiety for many weeks.

Some of my friends, in whose judgment I have great confidence, have questioned the accuracy of this diagnosis, and have stated that the pregnancy was interstitial and not tubal. I am not surprised at this opinion, in view of the termination of the case. It is hard to explain the method by which the foetus was pushed into the cavity of the uterus if it were *outside* of that organ. That it was outside admits of no question, because exploration with the vaginal suppository, and also with the finger proved beyond question that it could not have been *in* the cavity of the uterus.

Furthermore, the bi-manual examination showed conclusively that the foetus was in the tube.

Had it been in the left horn of the uterus—or had it been interstitial, the impression made upon the hand inserted in the cul de sac would have been entirely different. You would have been conscious of tissue, more or less thick, intervening between the foetus and the inserted hand.

In the case before us there was no such feeling. On the contrary, the distinctiveness of the ballottement, the extreme thinness of intervening tissue, the perfectly clear outline of the foetus, which could be distinguished as readily as if you had it in your hand, all indicated beyond doubt that it was a true tubal pregnancy.

It is difficult to describe the distinctiveness of the signs referred to but it seems to me that no one could have *felt* them without reaching the same conclusion that I did.

It will not do to say that it could not have been tubal, because it was pushed into the uterus, and was expelled per vaginam.

It will not do to say that such a result is impossible.

However difficult it may be to explain the mode in which this was accomplished, yet here is a case in which the fact cannot be denied.

The case is one of great rarity, and of corresponding interest, and therefore I thought it worthy of being reported, and this is my apology for bringing it before you a second time.

REMARKS BY DR. WM. P. CHUNN.

DR. WM. P. CHUNN had seen one case of extra uterine pregnancy. As the history and pathology of these cases had been already discussed he would not enter into those subjects, but would simply add the case to those already recounted to show the termination which sometimes results when nothing is done. The woman in this case presented the usual history of pregnancy up to a short time before examination. She had amenorrhœa for a number of months, the breasts were swollen and secreted milk, and the areola was largely developed. She was certain that she was pregnant, but complained that she felt no motion of the child, and that shortly before coming for advice the breast had fallen and that the secretion of milk had ceased. Upon bimanual examination an indistinct enlargement was felt to the right of the uterus, and the uterus itself felt soft and velvety. No diagnosis was made, and the case drifted into other hands. Septicæmia became fully developed and after a week or two the woman died. At the post mortem an extra uterine fœtus was found undergoing decomposition which was evidently the cause of death. This was a number of years ago and rules were not so well laid down for the treatment of such cases as at present.

